The RUBBER AGE

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Late News of the Rubber Industry

Samson Begins Operations In New Plant Addition

THE starting of the first operations in the new Los Angeles factory of the Samson Tire & Rubber Corporation was the occasion for a celebration by the officials of the company. The plant is not entirely completed and will not be ready for final occupancy until October but sufficient space has been finished to accommodate the milling department, which has been started in order to increase the production facilities of the two existing plants of the company.

The electric switch controlling the machinery was thrown by Master A. Schleicher, 5-year-old son of B. F. Schleicher, vice-president of the company. Two complete mill lines with eight machines were set in motion.

The new factory is unusual in its construction, being of Babylonian architecture, in keeping with the name of the company. The celebration of the formal opening of the plant will take place upon the completion of the building in the fall.

Goodrich Earnings for Six Months Set New Record

THE net earnings of the B. F. Goodrich Company for the first six months of the current year were estimated to be in excess of $5,000,000, according to a recent Dow, Jones & Company report. This figure is after all charges, including provision for federal taxes, have been deducted and compares favorably with the net profit of $3,513,023 for the entire year of 1928 and with the net loss of $1,574,889 incurred in the first half of 1928.

After providing for preferred dividend requirements on the six months period the balance for the half year equals approximately $4.05 on the 950,000 shares of common stock currently outstanding, an amount in excess of the entire year's dividend requirements on the junior issue.

Notwithstanding the record low current selling prices on manufactured goods during the last half year it is estimated that the final sales figures for the period will exceed the former record of $70,624,878, shown in the first six months of 1928. Sales in the same period of 1927 and 1926 totaled $69,274,347 and $67,690,286 respectively.

Based on experience of normal years in the past, and in spite of the 2½ per cent rebate to dealers, just put into effect, it is expected that the sales and earnings for the second half of the year will not only equal the first half but in all probability will run appreciably ahead of the period just ended. This situation, of course, is contingent on a stable crude rubber market.

"This prognostication," according to the Dow, Jones report, "is based on the fact that Goodrich is not such a heavy producer of original equipment as most of the other major rubber manufacturers and consequently reaps its largest profits during the season of heaviest dealer buying. In past years of normal operating conditions, dealer buying has been greater in the second half than in the first half.

"Although earnings during the current year will probably be well in excess of $8 a share on the common stock, a margin of 100 per cent above common dividend requirements, prospects for 1930 are that several million dollars worth of additions and betterments to existing plant facilities in Akron, California and Canada, which will be completed by the end of 1929, should find full reflection in 1930 operations."

Goodyear Increases Production At Los Angeles Plant 33%

PRODUCTION of the Goodyear Tire & Rubber Company of California for the first four months of this year showed an increase of 33 per cent over the corresponding period of last year, according to figures released recently by J. X. Kennelly, Advertising Manager. From January 1, last, to April 30th, last, a total of 1,188,260 tires were produced at the Los Angeles plant, as compared to 886,913 during the same months last year.

The Los Angeles factory of Goodyear is now approaching its ninth anniversary. It started production on June 14th, 1920, and the 14,000,000th tire will be produced about June 15th, next. The combined tire production of all Goodyear plants for all time is now approximately 135,000,000, of which total one-tenth has been built in Los Angeles.

Present average daily production of the Los Angeles plant is 13,000 tires and tubes. The pay roll, carrying approximately 3,200 persons, is running at the annual rate of over $5,500,000.

Officials estimate that $6,000,000 is annually spent by Goodyear in Southern California for supplies, equipment and material. About 17,000 tons of crude rubber are imported annually through the Los Angeles Harbor, while the yearly requirement of raw staple cotton, of which Goodyear is the largest consumer in the West, amounts to about

32,000 bales. The Goodyear Textile Mills Company of Los Angeles is a companion company to the Goodyear Tire & Rubber Company of California.

Auto Accessory Industry Ends Record First Half

THE automotive parts and accessory industry had another satisfactory month in May, with business running well ahead of previous years. An expected seasonal slowing up in operations made its appearance, but the decline from the record April level was a moderate one. While June will show some further recession, a record first half is assured. The tremendous momentum gathered by the industry in the first five months of the year will carry it through the summer season and into the third quarter well ahead of the same period in previous years, according to the Motor and Equipment Association, of which several rubber manufacturers and wholesalers are members.

Aggregate shipments in May of several hundred manufacturers supplying parts and accessories to the car and truck manufacturers and parts, accessories and garage repair equipment to the wholesale trade were 245 per cent of the January, 1925, base index of 100, as compared with 254 in April, 241 in March, and 201 in May last year.

Parts and accessory manufacturers selling their products to the car and truck manufacturers for original equipment made shipments aggregating 278 per cent of the January, 1925, base as compared with 287 in April and 215 in May, 1928. Accessory shipments to the wholesale trade in May were 91 per cent as compared with 91 in April and 113 in May last year. The accessory business, which has been adversely affected for several years by standard equipment at the car plants, and also by the policy of accessory distribution of some car manufacturers, has shown an improvement this year.

New Company Takes Over Old Erie Rubber Plant

HEADED by local men of long experience in the rubber industry, a new corporation has been established and will start operations in the factory formerly occupied by the Erie Rubber Corporation at Sandusky, O. The Ohio Fibrated Asphalt & Rubber Company, a new Delaware corporation, has been organized and has formally notified the Sandusky Chamber of Commerce that it will take over the plant and commence operations this month, if new equipment can be installed in time.

The company will manufacture mechanical molded goods, paving blocks, matting, expansion joints, roofing and other rubber and fibrated asphalt items. There is now ample rubber equipment in the factory, but new machinery is being added for the asphalt products. It is hoped that the company will be able to employ about 100 workers when production gets under way.

H. R. Greenlee of Sandusky, who was receiver of the old Erie Tire & Rubber Company and in charge of operations for several years, is president of the new organization. W. P. Young is vice-president and secretary, and C. E. Seigfried is second vice-president.

The purchase of the business and part of the equipment of the Erie Rubber Corporation by the Swinehart Tire & Rubber Company of Akron was announced on February 18. The Swinehart company acquired the business, patents and plans of the Erie company, and J. A. Miller, president and general manager, joined the sales force of Swinehart in charge of the sale of Erie products, which are now being made under that name in the Swinehart plant at Akron. At the time the operation of the Sandusky factory was discontinued a large portion of the equipment of that plant was moved to Akron.

For a month prior to the Swinehart announcement, rumors of the sale of the Erie Rubber Corporation were prevalent, but officials of the company remained noncommital. The company had been under the control of Eastern men who were creditors of the old Erie Tire & Rubber Company, and when shut down in February the plant was working with only thirty-five men as against a force of 200 workers who were employed last summer.

U. S. Now Control 31 Per Cent Of World Rubber Goods Exports

THE United States is the acknowledged world leader in the supply of rubber manufactured goods, exporting in 1928 a total in value of $73,410,400, or approximately 31 per cent of the total world exports, according to the Department of Commerce.

France formerly held second place in 1926, but in 1927 the United Kingdom, once the leader, supplanted France and maintained that position during 1928. Canada has made rapid strides in recent years and is gradually pushing France into fourth position. Germany maintains consistently fifth place and Italy sixth.

The following statistics show the trend of the various countries and may be considered as indicative of their trade endeavors:

VALUE OF EXPORTS OF RUBBER GOODS BY PRINCIPAL COUNTRIES

Country	1926	1927	1928[1]
United States	$61,980,700	$75,690,100	$73,410,400
United Kingdom[2]	42,870,100	38,236,600	37,616,700
France	44,363,300	37,755,200	30,979,100
Canada	25,619,500	27,734,200	30,429,500
Germany	23,543,200	24,500,800	27,422,000
Italy	15,303,200	14,343,200	13,419,900
Belgium	4,318,900	5,840,200	8,685,300
Austria	4,687,000	5,544,000	[3] 5,951,000
Japan	3,337,000	3,526,800	4,104,500
Latvia	1,553,000	2,433,400	2,958,900
Soviet Russia[4]	663,000	1,020,000	2,295,000
Sweden	1,420,756	1,696,200	2,086,100
Czechoslovakia	1,128,600	1,455,700	1,630,500
Switzerland	650,500	946,800	1,192,900
Netherlands	1,301,900	915,200	1,001,800

[1]1928 figures are preliminary and subject to revision.

[2]The statistics for the United Kingdom do not include exports of rubber-proofed garments, which were valued at $3,557,800 in 1926 and $3,503,800 in 1927. Exports for 1928 are not available.

[3]Estimated.

[4]Fiscal year October-September.

Delion Tire & Rubber Company Doubles Its Capital Stock

THE capitalization of the Delion Tire & Rubber Company has recently been increased from 100,000 shares to 200,000 shares of common stock. The company is expected to expand its production facilities and to make an attempt to secure wider distribution of its product.

The company was incorporated on May 14, 1924, under the laws of Maryland for the purpose of manufacturing automobile tires, tubes and other rubber commodities. Since that time the company has expanded by acquiring the Dreadnaught Tire & Rubber Company, the plants of which cover six acres of land and enclose 43,000 square feet of floor space. The Delion plants are located at Orangeville, Md.

The Delion company showed a gross profit of $7,497 in the fiscal year ended February 28, 1929, as compared with a deficit of $9,315 in the fiscal year ended February 28, 1928. The net loss for the last fiscal year, however, was $152,420, compared with a net loss in the preceding year of $145,769.

The balance sheet as of February 28, 1929, showed total current assets of $41,217, as against total current liabilities of $36,476. In addition, land and buildings were valued at $139,457 and machinery and equipment at $340,927. Patents and good will were carried on the company's books at $200,030. The book value of the common stock, as indicated by the balance sheet, was $405,827, or $4.06 per share. The common stock, which is listed on the Baltimore Stock Exchange, is currently selling at about $5 a share, although it has been as low as $1 this year and as high as $19.50 in 1928. There is no preferred stock and there is a funded debt consisting of an $83,000 first mortgage paying 7 per cent. The common stock does not pay a dividend.

The officers of the company are H. S. Jackson, president; S. C. Cooke, vice-president and secretary; P. Y. Waters, treasurer; W. P. Moore, assistant secretary and assistant treasurer.

U. S. Rubber Company Protests New Jersey Lighterage Fees

THE United States Rubber Company, through its general traffic manager, George F. Hichborn, declared early this month in a letter to Governor Larson of New Jersey that elimination of free lighterage of freight in New York harbor as proposed by certain New Jersey interests would increase the cost of northbound freight movements to New Jersey plants.

The company is particularly interested in the proposal of the New Jersey interests to ask the Interstate Commerce Commission to declare that service furnished under the rail rate on freight to and from New York be confined to its transportation in cars, Mr. Hichborn said, because it owns plants in Jersey City, New Durham, Passaic and New Brunswick. The United States Rubber Company is a New Jersey corporation.

"As large users of the facilities of the Port of New York in both import, export, domestic and intercoastal freight," Mr. Hichborn stated, "we are of the opinion that the New Jersey interests who are agitating institution of litigation before the Interstate Commerce Commission seeking an order requiring the carriers to discontinue this long established practice, are barking up the wrong tree. We understand that they have already interested the New Jersey Chamber of Commerce and are now seeking State aid.

"The writer has had many years of railroad and industrial traffic experience in New York City and firmly believes that the shipping interests of all parties within Greater New York, or, rather, within the Port Authority district of New York and New Jersey, would be served best by the continuance of free lighterage.

"On northbound freight such as cotton piece goods, etc., reaching New York (Manhattan) via the Old Dominion Line-Ocean Steamship Company and Clyde Line consigned to our Jersey City and Passaic factories we receive the free lighterage delivery at the Jersey City waterfront. The discontinuance of free lighterage at New York would mean an additional transportation cost for our plants to assume on this particular movement.

"We respectfully ask that most careful consideration of this subject be given before the State of New Jersey becomes a party to such proceedings."

Several other appeals have been forwarded to Governor Larson by industrial concerns, including the New Jersey Zinc Company, the National Sugar Refining Company, the Corn Products Refining Company and the Magor Car Corporation, all of which contend that they would suffer by the elimination of free lighterage. Eleven of the twelve steamship lines using the New Jersey waterfront previously had petitioned the governor to assist them in maintaining the existing lighterage system.

Akron-Williams Rubber Machinery Increases Facilities With New Plant

TO MEET the increasing demand and provide greatly enlarged manufacturing facilities the Williams Foundry and Machine Company Division of the National-Erie Company has just completed a new large factory at Erie, Pa., on property adjacent to the steel foundries and gear plants of the National-Erie Company.

New Akron-Williams Plant at Erie, Pa.

The new building is of fireproof construction, steel and brick, of the latest modern factory design.

Besides enabling the Williams Foundry and Machine Company Division to maintain larger production schedules on Akron-Williams equipment than before, and provide for further growth, the new plant is exepcted to make possible new economies in production.

The Williams Foundry and Machine Company Division of National-Erie is one of the oldest manufacturers of rubber machinery. Equipment built by this manufacturer is found in practically all plants of the industry, particularly such machines as tubers and tube molders. Other machines in this line includes hydraulic presses, steam jacketed molds, heater presses.

Besides a complete line of rubber making machinery the Williams Foundry and Machine Company builds a complete line of tire repair equipment, including types of steam vulcanizers for steam vulcanizing by electricity, gas, gasoline or coal, reducing shells, boilers, buffers, lasts, air-bags and other accessories or tools needed for tire repair work.

Canadian Goodyear Company Shows Gains in Sales

SALES in all divisions and in all territories of the Goodyear Tire & Rubber Company of Canada show satisfactory increases so far this year over the corresponding period of last year, according to a statement sent to the stockholders from C. P. Carlisle, president of the company. Profits were also declared satisfactory and the company has borrowed no money during the year and has a considerable amount on call.

The capacity of the new Toronto plant of the company has been materially increased. The company also has an office and warehouse building under construction at Saskatoon, which will be ready October 1. Plans have been made to expand the Bowmanville plant and this work will have been completed by the first of next year. The St. Hyacinthe cotton plant will be extended to double its present capacity and according to Mr. Carlisle this the plant has proven quite profitable and is a valuable asset to the rubber company not only as to the cost of the fabrics but as to quality. New machinery will be operating at this plant before the close of the year.

President Litchfield and Vice-President Slusser With Governor Graves of Alabama

Goodyear Begins Operation at Gadsden

President Hoover Presses Button Inaugurating the First Major Tire Factory To Be Constructed in the South — Dedication Ceremonies Are Followed By Inspection of the Plant and Dinner to Seven Hundred People

WITH the pressing of a button at Washington by President Hoover, the new tire and tube manufacturing plant of the Goodyear Tire & Rubber Company at Gadsden, Ala., was formally opened on July 11. P. W. Litchfield, president of the Goodyear organization, headed the dedication ceremonies that followed, with Governor Bibb Graves of Alabama, among the distinguished list of speakers.

More than 30,000 persons from various parts of Alabama and from Tennessee and other neighboring states were present on the occasion of the opening of this new industry in the South. At the signal from President Hoover, an American flag was raised above the factory clock tower, and all in attendance stood bareheaded as a band played the "Star Spangled Banner." A whistle blast was blown for each of the 15 different production units, and at the same time similar whistle blasts were sounded at the other plants of the Goodyear company in Akron, Los Angeles, Wolverhampton, Sidney and other cities.

Ceremony Is Broadcast

From a speakers' platform on the receiving room platform, Harry Blythe, assistant to the president, moved before a microphone and introduced as speakers the mayor of Gadsden, President Litchfield and Vice-President C. A. Stillman. Mr. Stillman in turn introduced his former college classmate, Governor Graves, who welcomed the new industry, voiced his conviction of what industry would mean to the South, and commented on the rich resources of the state. Mr. Litchfield in reply affirmed his confidence in the South, outlined Goodyear's policies of service, thanked the people for their support and pledged his company to be a good neighbor.

A plant inspection was followed by the serving of dinner to 700 people on the top floor designed for tire storage, while several thousand ice cream cones, sandwiches and soft drinks were served on the grounds to the public. The party that assisted President Litchfield in dedicating the new plant included C. C. Slusser, F. M. Harpham, C. A. Stillman, R. S. Wilson, vice-presidents; Congressman Francis Seiberling and H. B. Manton, directors; P. E. H. Leroy, treasurer; W. D. Shilts, secretary; F. R. Wahl, counsel; J. E. Mayl, southern division sales manager; C. T. Hutchins, advertising manager; H. J. Carroll, traffic manager; C. C. Grant, engineering manager; A. G. Cameron, export manager; Ed Koken, Canadian superintendent, and Ross White, manager at Buenos Aires.

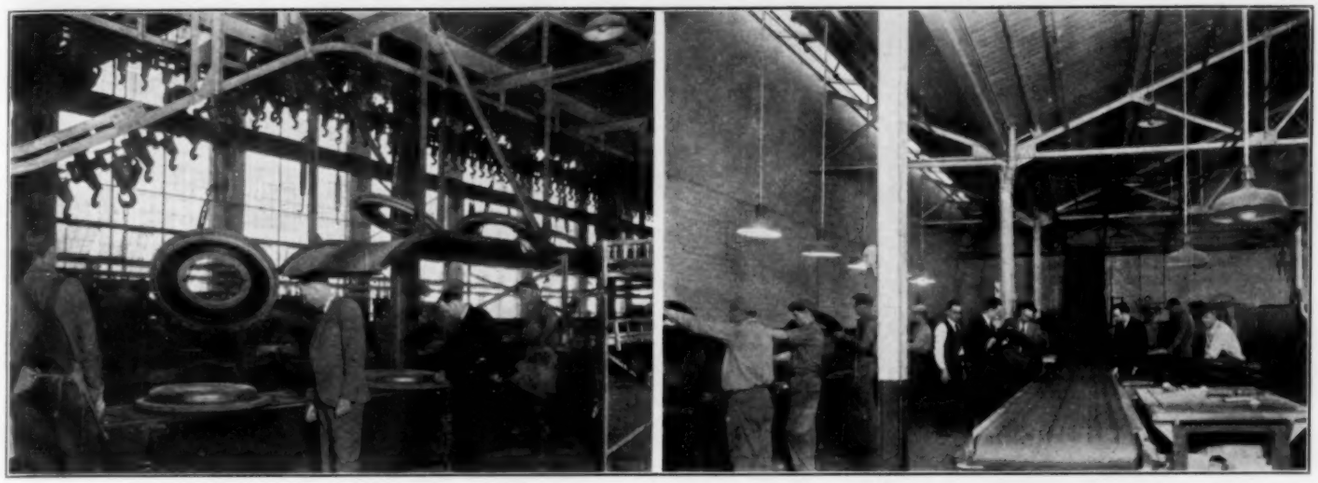
P. W. Litchfield, President of Goodyear, Making the Dedication Speech, Surrounded by Prominent Guests and Company Officials

Plant Built in 4½ Months

The new Gadsden factory, said to be the most modern tire plant in the world, was erected and put into operation in four and a half months, with machinery installed, materials shipped in, executives selected and trained for their new work, and employes hired in. Ground was broken for the factory on February 7, the first fire was started in the boilers on June 13, the first tire built on June 21, and the first carload of tires was shipped out July 2, going to the Atlanta, Ga., branch of the company.

In addition to the factory, a large residential section has been added to Gadsden during the last five months. Some 500 houses were erected in record time; streets and roads were laid out; sewers, water mains, electric light lines put in.

President Litchfield and Vice-President Slusser made a trip of inspection to the new Goodyear cotton mills at Cartersville, Rockmart and Cedartown, Ga., on the day preceding the Gadsden plant opening.



Illustrations of the Conveyor Systems in the Goodrich Los Angeles Plant

Straight Line Production in Pacific Goodrich Factory

Crude Rubber and Raw Materials Enter at One End of One-Story Plant and Finished, Inspected and Wrapped Tires Leave at Other End—Factory is 1,750 Feet Long

By WILLARD D. MORGAN

IN contrast to the Akron factory with its numerous buildings and many story levels the Pacific Goodrich tire factory in Los Angeles has worked out one of the best examples of straight line production for the modern tire factory. With the crude rubber and raw materials entering this factory at one end and the completed, inspected, and wrapped tires leaving at the other end a complete tire fabricating picture is presented.

In a one story building 1,750 feet long the warehouse, stockrooms, masticating mills, rubber fabricating machines, bead and tread stock machines, building room, vulcanizing pits, finishing and inspecting rooms, and final storage departments are all laid out in logical succession.

With the aid of only one or two electric tractors, electrically driven conveyors, and mono-rail carriers, all the materials are quickly and efficiently moved from one end of the factory to the other. Each department along the one-third of a mile production line actually dovetails into the next one. With such a close working plan each unit can easily check up on its neighbors in such a way that there is very little time lost in finding and correcting anything which may need attention from the department managers.

All the plantation rubber from the Far East comes into the Los Angeles harbor, only fifteen miles away, where it is loaded on freight cars or carried to the factory by motor trucks. At the Pacific Goodrich warehouse the raw rubber is unloaded and stored directly from the cars or trucks. After sampling and storing the raw stocks are ready for use.

Electric tractors and hand trucks take the raw materials to the mill room where the stocks are blended and mixed into compounds of rubber. The gum stocks are then delivered by trucks and conveyors to the next units where it is prepared for tube and tread stock and also for use in the fabric rubberizing machines.

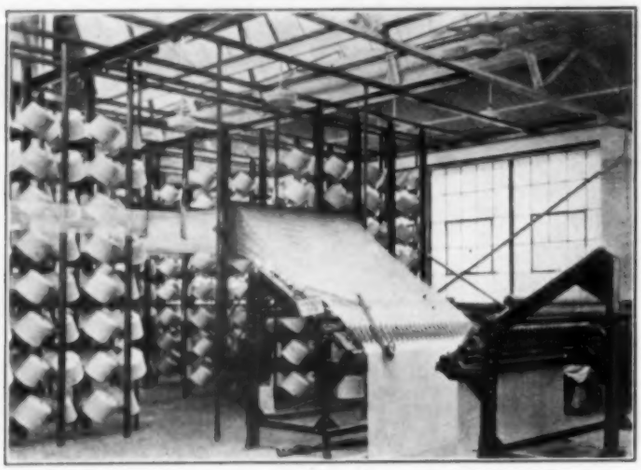
The creel room is the only department which is located on a second floor level. However this department has been planned for a specific purpose by furnishing the fabric directly to the calender machines below. The weftless fabric used in this department is received in cones which are mounted on creels and then fed down through the floor into the rubberizing machines. There are 1,800 cords running down with no cross weaving to supply each machine. The rubberized fabric is then taken in 1,000 pound rolls directly from the calender machines by mono-rail carriers and delivered for storage behind the bias cutting machines.

As the cuts from the bias machines are being rolled into small spools for storage in racks between the cutters and the tire building department, the tread stock and other tire building essentials are being prepared along parallel lines. As a result the rubberized fabrics, beads, tread stock, breakers, and other tire parts actually come to a focus or storage point next to the tire building department. By having such immediate access to the storage unit the stock supply men can quickly regulate the demands of the tire and tube building units. Stocks may easily be inspected and samples taken to the testing laboratory only a few feet away.

After the tires are built from the nearby stocks they are placed on conveyors and carried to the curing room

where they are prepared for the vulcanizing pits. A Palmer-Bee conveyor is used to carry molds and the uncured tires to the vulcanizers.

This is a heavy platform type of conveyor 2′ 0″ wide, made of heavy section channels mounted on two strands of specially designed chain. The chains are equipped with



Creel Room—Cords Run Down to Calender Machines Below

Timken roller bearing wheels running on T-rail tracks, all of which is necessary to carry the heavy molds to and from the vulcanizers with a minimum chance for stopping or delay of any kind.

The principle of this conveyor is patterned after the automotive assembly lines, which bring the work to and from the operators and set the pace for the men for each operation.

The molds are delivered to any one of a group of vulcanizers by means of a traveling loader equipped with shear bar and live rolls, which transfers the molds from the conveyor to the heater. By reversing the same machine it is used as an unloader for drawing the molds from the heater back to the conveyor. From the heater the molds travel around the system to a work conveyor where an overhead cover conveyor lifts the cover off and carries it overhead while workmen below remove the cured tire and clean and refill the mold with an uncured tire, the mold passing on to a point beyond where it receives the cover from the overhead conveyor automatically.

Vulcanizing Units Set in Pit

The vulcanizing units have been constructed in a specially built pit with the top opening at the first floor level. Consequently nothing is allowed to interfere with the continual tire construction plan. If certain units threaten to take more space they have been placed below or above the production line. The creel room is above the calendering machines, and the heating units have been placed below the main floor level of the curing room.

From the vulcanizing units the tires are conveyed to the finishing department where they are trimmed, washed, painted, and go through a final inspection to insure perfect quality. After the final inspection the tires are sent through the wrapping machines and taken on trucks to the warehouse for storage.

The manufacture of inner tubes proceeds along parallel lines with the tires. Hand trucks are used to convey the raw stock from the calenders to the tube room where it is prepared and cured. After the final inspection the tubes reach the same destination as the tires in the warehouse where they are prepared for shipment. A spur railroad track has been constructed beside the final warehouse, so that all new stock can be sent out for immediate distribution. Motor truck loading platforms have also been provided for a second means of transporting the finished products.

In operation the Goodrich Los Angeles plant works as smoothly and efficiently as a continuous conveying system itself. The raw products entering at one end move along through the one-third mile long factory to the final shipping department to complete one of the best examples of straight line production in the modern tire plant. Consequently this factory stands out as a unique example of a factory without elevators, underground tracks, and other conveying systems to slow up the movements of the rubber products.

Treatment of Balloon Tires

In view of the great importance to vehicle owners of proper use of balloon tires, the Standards Division of the Society of Automotive Engineers has felt that the incorporation in the Society of Automotive Engineers specifications of some information on load and inflation pressures for balloon tires for passenger cars and commercial vehicles and for high-pressure tires for commercial vehicles was advisable. As the Tire and Rim Association has approved such tables for publication in its handbook on specifications, the Society of Automotive Engineers tire and rim division decided to recommend that the following table be adopted as a new Society of Automotive Engineers recommended practice:

Passenger-Car Balloon-Tire Load and Inflation Table

Minimum Inflation Pressure, lb.....		28	30	32	34	36
Tire Size	Wheel Diam.	Maximum Load Per Tire in Pounds				
4.40	18 and 19	610	660	710	760	810
	20 and 21	650	700	750	800	850
4.50	18 and 19	650	700	750	800	850
	20 and 21	700	750	800	850	900
4.75	18 and 19	700	750	800	850	900
	20 and 21	745	800	855	910	965
5.00	18 and 19	745	800	855	910	965
	20 and 21	815	870	925	980	1035
5.25	18 and 19	815	870	925	980	1035
	20 and 21	880	940	1000	1060	1120
5.50	18 and 19	880	940	1000	1060	1120
	20 and 21	925	1000	1075	1150	1225
6.00	18 and 19	1000	1075	1150	1225	1300
	20 and 21	1075	1155	1240	1320	1400
(6.20)	18 and 19	1075	1155	1240	1320	1400
6.50	20 and 21	1140	1230	1320	1410	1500
(6.75)	18 and 19	1200	1300	1400	1500	1600
7.00	20 and 21	1300	1400	1500	1600	1700

Goodyear Boy Scouts Leaving the Home of P. W. Litchfield for Their Annual Tour

Navy To Devote Large Sum To Rubber Products

Estimated That Twenty Tons of Rubber Goes Into Each Ship of 8,000 Tons Displacement—Standard Specifications Available for All Equipment—All Materials Thoroughly Tested

IN behalf of the new Naval building schedule, calling for construction of 15 light cruisers and two aircraft carriers, with one or two battleships to be laid down in each of the years 1931 and 1932, the Navy will devote in excess of eleven million dollars to rubber equipment for the vessels, including surgical equipment and gas masks.

It has now been definitely decided that for practically all possible military gases, the rubber mask, treated in various manners, is the most acceptable. Rubber masks, in various designs to meet special military protective needs, will be acquired both from the Chemical Warfare section and, later, from civil manufacturing plants. It is intended to cultivate civilian manufacture with the end in view of introducing the standard military mask rapidly throughout the country upon any imminency of hostilities.

Rubber Masks Used in the Navy

A general standardization of rubber materials is now in process, and new specifications are being created and announced as rapidly as research can progress with the present limited appropriations for the purpose. However, regardless of limited funds, the work now in hand is regarded as of importance to the industries furnishing the Navy with its rubber materials.

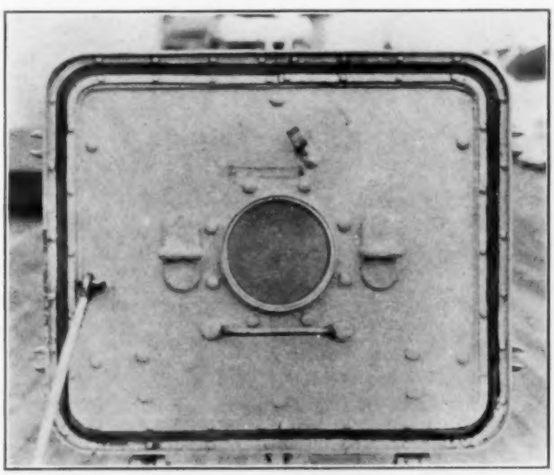
New specifications have been prepared for all types of electrical cable and for hard-rubber jars for storage batteries. These specifications are available upon written request of the Navy Department, Bureau of Engineering.

It is noteworthy in the projected new construction that rubber will form an important element in the building of the ships, there being an estimated 20 tons of rubber to be incorporated in each ship for each 8,000 tons of standard displacement.* This rubber will be distributed among 231 utilities. There will be, in toto, some 250,000 tons of construction placed in the water by 1932. Additionally, the normal replacement of rubber utilities will go on.

Each Navy Yard has been equipped with a set of testing equipment, and will also provide a chemist who will analyze rubber materials for the Navy primarily, but who can be made available for tests for establishments of a civil nature in the vicinity of the Yard in which he and his equipment is located.

The inspection of rubber is, of course, exceedingly complex, as it is a compound which is capable of being manufactured in many ways, and which necessitates accurate analyses to insure compliance with Navy specifications. The Navy has constantly aided the manufacturers of these compounds to increase the uniformity of their products, and substantial improvements along these lines have been made. Inspectors of material make full use of these facilities, with the result that there is very little controversy with the manufacturers, who appreciate that these tests are absolutely unbiased.

Finished products in rubber are tested both at the naval experiment station, Annapolis, Md., and at the testing laboratory in the New York Navy Yard. A system is in vogue at these places whereby manufacturers are permitted, on application to the Bureau of Engineering of the Navy, and with its approval, to submit samples of their products for exhaustive physical, chemical and life or service tests, upon payment of a small fee to cover the actual cost of such tests. At these stations, manufacturers, especially those who have not such facilities themselves, can be as-



Rubber on Hatch Coamings

*The Navy Department states that as a rough estimate there may be as much as 5 tons of rubber in the machinery installation alone.

sured of a fair test, at a minimum of expense. If the test is satisfactory, the manufacturer has the knowledge that his product is up to the standard, and that he can have no hesitancy in marketing it with the assurance that if it will pass the Naval requirements it should pass any others. If it is not up to the standard, it is probable that he will receive such information as will enable him to improve his product.

There is the stipulation that the results of these tests must not be used for advertising purposes. The Navy must jealously guard the confidence which the manufacturers repose in it, and must preserve at all times the position of an impartial friend and judge.

However, it is felt, that though these facilities are used by many rubber material manufacturers, they should be employed by many others. Indeed, many manufacturers are unaware that these facilities exist. The Navy desires that they know of this service which can be had by many a small and "medium-large" plant unequipped with its own testing facilities.

To supplement this service, the Naval Research Laboratory has been established. Here it is possible to take up promising inventions, methods or processes, and develop them into products which will ultimately increase the Navy's efficiency.

Specifications Submitted on Request

In the endeavor to prevent misunderstandings as to the precise nature of the materials required for its rubber utilities, the Navy has evolved an elaborate set of standard specifications. Standard specifications for each of the rubber requirements have been prepared and are kept on file for reference and also for distribution. Any citizen of the United States who desires any one of those specifications is furnished with it upon request. The specifications are indexed so simply that reference to them in contracts leaves no doubt as to the kind of material desired.

Manufacturers and agencies considering entering the field to supply materials to the new vessels would do well to peruse the standard specifications before taking up development work looking to the handling of Navy contracts. Generally speaking, it is somewhat of an asset in bidding on Naval orders, to be able to state that the Navy's own testing system has already passed on a rubber product. This is obvious enough, and such action is strongly recommended.

British I. R. I. Examinations

THE last examinations of the Institution of the Rubber Industry for Associateships were held in Birmingham, England, in the offices of the India Rubber Manufacturers' Association on March 18. Two lists of questions were offered, one on the general science of rubber and the other on rubber technology. The latter paper is reproduced below. Five questions out of the eight were to be answered and the time allowed was two and one-half hours.

Examination in General Rubber Technology

Question 1. Estimates are required for the production of a number of plain punched mats. The compound will not stand the open cure. Describe briefly the operations and materials which you would have to allow for.

Question 2. Work out the theoretical specific gravity of the following compound, and give the percentage of rubber by volume it contains:

Rubber	25	lbs.	S.G.0.93
Zinc Oxide	20	lbs.	S.G.5.57
Litharge	5	lbs.	S.G.9.28
Wax	3½	lbs.	S.G.0.90
Sulphur	1½	lbs.	S.G.2.00
	55		

You are molding a valve in the above compound 12 in. diameter 1 in. thick. What approximate shrinkage would you allow?

Question 3. Describe briefly the *different* methods of manufacturing any three of the following rubber goods, indicating at the same time the desirable characteristics of the compounds:

(1) Hose.
(2) Gloves.
(3) Solid tires.
(4) Hot water bottles.

Question 4. Analyze the various forms in which factory scrap occurs and indicate how each might be dealt with in a factory covering a wide range of general rubber products.

Question 5. Classify and explain the factors involved in speed of production in press molding.

Question 6. Give a list of the common softeners used in rubbber compounding and point out any special features in their influence on the uncured or on the cured compound.

Question 7. What difficulties are caused by calender grain in subsequent manufacturing processes? By means of a few examples show how these are dealt with.

Question 8. Write a short essay on the value of specifications, comparing those based on material with those based on performance.

Rubber Goods at Du Pont Exhibit

A WINDOW display of rubber products was a feature during June at the Du Pont Products Exhibit on the Boardwalk at Atlantic City. The display was designed to show the relative importance to the rubber industry of various chemical products such as accelerators,

Window Display of DuPont Exhibit at Atlantic City, N. J.

lithopone and other heavy chemicals. A wide range of manufactured rubber articles was shown.

These included tires for automobiles, airplanes and bicycles; tire accessories; hard rubber specialties, such as rubber pipes, fittings, dipping basket, bleaching eye and dye sticks used in the chemical industry; garden hose; tank balls, floats, washers and other plumbing specialties; jar rubbers; raincoats; firemen and police coats; tile flooring; golf balls; footwear, including wading boots, white boots, bootees, Keds, tennis shoes, women's pumps and gaytees; bathing accessories and novelties; and various and sundry articles sold by the drug trade. The articles shown were manufactured by the United States Rubber Company of New York City.

Rubber Pads Under Railroad Ties

In regard to the experiments recently made over a mile of trackage on the Federated Malay States Railway with rubber packings between rails and ties the chief engineer of road has announced that while "it is not anticipated in the light of present experience that the rubber pads are likely to effect any improvement in efficiency, either in running conditions or in reducing maintenance costs, it has been definitely established that the pads that have been used on bridges have reduced secondary stresses slightly. Whether this reduction in secondary stresses is likely to prove an economic factor has not yet been established, as the initial cost of the pads is high, and their life under railway conditions is uncertain."

Some Future Problems in the Tire Industry

Distribution Problems Will Probably Decrease With Consolidations of Companies—Greater Economies Must be Found in Plant Operations—Chemists to Play Important Part

THE tremendous spurt in the output of tires for the first six months of 1929 has been one of the outstanding features of this period of industrial activity. A large replacement demand, record production of new cars, and increasing export shipments have combined to make this record, stimulated by the lowest prices on casings and tubes ever known. Yet the rubber tire industry has had periods of activity like this before, only to be followed by losses and readjustments. What, then, lies ahead for the industry? Less than three years ago there were 112 tire manufacturers in this country; today there are approximately 85. Five of these do more than fifty per cent of the volume. Add ten more companies and you have 90 per cent of the volume of tires accounted for.

Distribution of tires has undergone many changes also. Part of the increases in sales by some of the large companies can be accounted for by mail order contracts. National advertising and established reputation have further entrenched the position of the large units. Yet from the above figures we discern that the small companies are still plentiful in numbers. By concentrating on special markets and types of business, many of them have been able to do well. With their distribution channel established, they have the advantage of low overhead. Several of them have recently consolidated. It would not be surprising to see further mortality among them for the next five years until the industry of the country is consolidated into fifty hands.

Distribution Problems Likely to Decrease

Further growth in tire production is almost a foregone conclusion. Even if the increase in the number of automobiles in this country does not proceed at so rapid a rate, the constantly recurring replacements and the growing export field insures a normal healthy increase every year. With the inevitable concentration of the industry into fewer companies, we can confidently expect that many of the distribution evils will disappear. But progress in reduction of distribution and manufacturing costs must continue if earnings are to be maintained, because barring unlooked for gyrations in the crude rubber market, no increases in finished tire prices can be expected.

Manufacturing economies in tire manufacturing have a limited range in which they can be effected, as the cost of the material far outweighs the cost of labor. Yet a recent trip through a large rubber tire plant revealed casual improvements which are probable as time goes on.

It must not be assumed that there is equanimity of opinion among tire engineers as to the "one best way" to make tires. Every company has its pet processes which they have developed, yet in all plants the general scheme is about the same. For example, in the mixing room some companies employ internal mixers, others 84 inch mills. Some water cool tread and tube stocks at the calender, others air cool them. Weftless cord fabrics is widely used, yet many large companies still use 2½ pick to 5 pick cord fabric. Some gum dip the cord, others friction it, still others impregnate it with latex.

Handling of Cord Fabric

The process of handling the cord fabric from the time it leaves the calender until it is built into the tire forms an interesting example on which speculations of future improvements can be made. First, it must be bias cut into various widths and either booked or put up in rolls. Then two ply bands for the various tires must be built and booked for the tire maker. These processes in themselves are not intricate or particularly costly, but they involve a series of rehandlings which in the aggregate would make a worth while saving if they could be eliminated. If bias cord fabric were a possibility (and who can say it is not?) one can visualize a slitting attachment at the calender and the fabric put up for band making directly at the calender. Even eliminating the possibility of bias fabric it would be possible to hook up a traveling bias slitter at the calender with a continuous machine for taking the cuts off and putting them into rolls. Every textile man is familiar with pillow tubing which is used for making continuous seamless bias binding. From this we can see the cord fabric of the future, made from creels of ply cords impregnated with latex, wound continuously on a large horizontal drum, then slit on the bias into continuous lengths. This idea is not wholly a new one. There is a further saving in waste if the idea could be worked out this way.

Practically all tires up to truck sizes are being built flat today with good success. Recently the writer watched a fast tire builder build a tire by this method. Although his bands, beads cushion, sidewall and tread, were all located in books, racked close to his machine, the time he spent getting his material seemed nearly as long as the minutes spent in assembling the casing. The conveyor engineer, in studying this job, would segregate that time as non-productive, and would probably design a slow moving conveyor feeding a section of tire builders. On this conveyor would be flat trays, each tray containing the assembled parts of a tire, the bands, beads, cushion, chafer, and tread, so that the time the operator spent fishing in cloth

books for parts, removing wrappers, and so on, would be eliminated. There would also be another conveyor which would take the finished tire to the expanding machines ready for insertion in the mould.

Conveyor Equipment in Curing Rooms

Most tire curing rooms have already been conveyorized. As the hydraulic rams of the vertical vulcanizers push out the finished moulds, they travel along a circular conveyor. An overhead crane picks up the top half of the mould, the finished tire is removed, the mould cleaned, and an uncured tire inserted, whereupon the mould moves round the conveyor to the vulcanizers again. More applications of efficiency of this kind to tire building would doubtless show an improvement in that operation.

Some of the largest truck and buss pneumatic tires are still built by hand. As the volume increases machines will doubtless be developed to take care of them.

Inner tubes are made both on curved and straight mandrels. Tape wrapping in either case has been eliminated. A very efficient unit for making tubes started with a warming mill where the stock was warmed for the tubing machine and fed into it by means of a small conveyor. From the tubing machine the stock passed through a water batch for cooling and was talced with soapstone by an automatic blowing device. The valve patch was placed and the tube cut to length, then blown onto a curved mandrel with air and vulcanized. The same crew which blew the uncured tubes onto the mandrels, removed them by the same method. The tubes then passed to a conveyor unit where the sizes were printed on the tube (eliminating transfers) the valve stem inserted and the splice cemented. Curing the splice was accomplished continuously by a series of steam jackets.

Care Taken With Tube Stocks

A rotating water tank with powerful search lights in the bottom, received the tubes inflated, dipped them for the detection of defects, whereupon they were passed along to the packing section, packed, and conveyed to the warehouse for shipment. All bales of rubber for use in tubes were stripped of the outer sheets, likely to contain splinters, then chopped in slices and run through a strainer with a fine screen, thus insuring the removal of all foreign matter likely to cause a defect in a finished tube. Several units are in operation where the forming of the tube is performed at the calender. Tubes made on a tubing machine are made along the same idea, even though the method is different, as the warmed compound proceeds continuously from the mill to the tuber as described.

Paralleling the improvements in processing tires will come advances by the chemists. Treads of greater tensile and abrasion, greater adhesions in the carcass have already made tires better and more durable. It goes without saying that this progress will continue.

The Largest Tire in the World

THE Goodyear Tire & Rubber Company has recently completed the manufacture of the largest tire in the world, a giant pneumatic casing 12 feet in diameter and 4 feet thick. It took three months to build and would cost $5,000. Its load-carrying capacity is between 40,000 and 50,000 pounds. The tire is said to be the equivalent of 80 Ford tires. The tire has been mounted on a trailer behind a specially designed bus and will tour the country. The company announces that the incentive to build this huge tire came from a well-known airplane builder who believes that eventually airplanes will be constructed of sufficient size to require casings of these dimensions.

This huge tire was seen by the public for the first time when it recently figured in the procession at Akron upon the occasion of the dedication of the new Goodyear stadium.

Akron's New Hotel Project

A NEW hotel project for Akron has been announced with the formation of the De Witt Hotel Company, which intends within the next ninety days to break ground for a $3,500,000 building, containing 550 rooms, to be erected on the old Y. M. C. A. site at the corner of Main and State Streets, Akron. Theodore De Witt, vice-president of the Hotel Hollenden Company, Cleveland, will head the new company. The project is said to have been financed entirely in Akron and will be solely an Akron institution. In the list of men and companies which are giving financial support to the project are to be found many names prominent in the rubber industry including Harvey S. Firestone and his sons and company; Goodyear Tire & Rubber Company and P. W. Litchfield; B. F. Goodrich Company; F. Seiberling; C. E. Slusser, J. D. Tew; India Tire & Rubber Company and Mohawk Rubber Company.

Theodore DeWitt

Architectural plans call for a structure seventeen stories high with every modern improvement in hotel construction. Besides the 550 guest rooms, other details include a large ballroom, a banquet hall seating 300, another banquet hall seating 200, a main dining room seating 350, a coffee shop and ten other private dining rooms. No name has yet been proposed for the structure.

Architectural Drawing of the Proposed Hotel

Besides heading the new hotel company, Mr. De Witt will assume active charge as general manager, but will at the same time continue his successful management of the Hotel Hollenden in Cleveland.

RUBBER CHEMISTRY and Technology

Essentials for Accurate Gaging of Compressible Material

By ROY W. BROWN

In Charge, Engineering Laboratories, Firestone Tire & Rubber Company

Abstract

Variables affecting the accurate thickness measurement of compressible sheet materials such as fabric and rubber stock are indicated as: 1. Linear accuracy of the micrometer. 2. Pressure exerted by the micrometer foot. 3. Size of the micrometer foot. 4. Friction in the micrometer mechanism. A unit area foot pressure of (70.3 gram. per sq. cm.) 1 lb. per sq. in. has been found satisfactory. Friction in the micrometer mechanism is shown to limit the minimum foot pressure to approximately (199.5 grams) .44 lbs., hence a (1.906 cms.) ¾" diameter circular foot, or equivalent, is required on present available mechanical gages.

Methods of meeting the above fundamental requirements are indicated for optical and magnetic gages. Limiting factors in the accuracy securable by the use of dielectric gages are discussed. The necessity for standardized practices is so apparent as to command consideration of all concerned.

IN measuring the thickness of compressible sheet materials, such as rubber, fabric, rubberized fabrics, or any material which deforms appreciably under small loads, various factors enter the measurement in addition to the intrinsic properties of the gage or dial micrometer uses. It is apparent that with gages having parts which come in contact with the material being measured, deformation of the material results in an indicated thickness less than the actual thickness by the amount of the deformation. This factor has been largely responsible for the relatively inaccurate measurements secured in the rubber industry, as compared to machine shop measurements.

The effect exerted by mechanical dial micrometers has been shown for several common materials.[1] Although much research has been devoted to more elaborate methods of gaging rubber materials, the simple dial micrometer is still used almost exclusively, with the exception of the few instances where it is desirable to measure, continuously, the thickness of moving materials.

To those who have studied the problem, it soon becomes apparent that the foot pressure of the dial micrometer must be accurately controlled, if practical accuracy is to be secured. Further, the foot pressure must also be reduced to a minimum consistent with the mechanical operation of available dial micrometers. A survey of various typical industries indicated large discrepancies in the practices as regards foot pressure. Also a survey of some 300 mechanical dial micrometers indicated a very wide discrepancy in foot pressures between different instruments of the same make, as well as between different makes. It was, therefore, thought desirable to determine the factors in dial micrometers which contribute to variable foot pressures and to determine the minimum foot pressure which could be used in a practical manner with commercially available dial micrometers. It was found that a unit area foot pressure of (70.3 grams per sq. cm.) 1 lb. per sq. in., gave readings on the majority of rubber and fabric materials within (0.051 M. M.) .002 inch of the actual thickness and represented average practice of a number of the industries investigated.

A survey of the dial micrometer manufacturers indicated that with minor changes production methods would produce instruments with foot pressure of a specified value. Also a survey of a large number of different makes of new and used instruments indicated that a minimum foot pressure of (199.5 grams) .44 lb. was required to insure accurate mechanical operation of the micrometer mechanism. On this basis, with a unit area pressure of (70.3 grams per sq. cm.) 1 lb. per sq. in., it was found that a (1.906 cm.) ¾" diameter circular foot, or other shaped foot of equivalent area, was the minimum which could be used in a practical manner.

Specifications were prepared covering the above features and dial micrometers have been secured for over a period of a year complying with such specifications. Section 3, "General Requirements," Paragraph A, reads as follows: "It has been determined that to secure satisfactory service the following performance must be secured: (a) An absolute linear accuracy to within ± (0.013 M. M.) .0005 in. (b) Securing and maintaining the specified foot pressure throughout the range of the gage to within ±10% of the specified value. (c) Minimizing friction in the gage from all causes to such an extent that its value throughout the entire operating range of the gage does not exceed ±10% of the foot pressure," and Paragraph K, "Accuracy Tolerances," reads: "These thickness gages shall measure linear distances to within ± 0.013 M.M.) .0005 in. The foot pressure shall be within ±10% of the specified foot pressure at any portion of the range. Friction at all portions of the range, due to all causes, shall not exceed ±10% of the specified foot pressure. The face of the foot, as well as the face of the platen upon which the foot bears shall be plane and parallel to each other to within (0.013 M. M.) .0005 in."

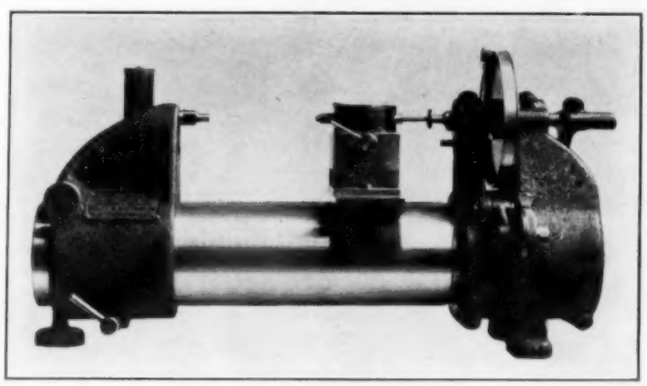


Fig. I
Precision Bench Micrometer

Much consideration was given to the use of dead weights to replace springs as a means of securing the desired foot pressures. An examination of available instruments indicated that a large number of these instruments had springs of such inferior design as to cause appreciable variations between the maximum and minimum readings as well as appreciable variations throughout the useful life of the instrument. In certain instances the mounting of the springs seriously increased friction and wear in the gage mechanism. These matters were discussed with the vendor's engineers and in several instances changes were made, which not only provided new instruments with foot pressure variation from all causes within ±10%,

but insured that such foot pressures would remain within the ±10% tolerances for the useful life of the instrument. These developments largely eliminated the necessity for dead weights and provided a truly portable gage which could be used in any position desired. Gages with dead weights as a means of securing foot pressures have been satisfactorily used in the laboratory and other places where extreme precision was desired. It was necessary in all cases to rigidly attach these gages to a non-movable object in such a manner that the spindle was maintained in a vertical position.

A method of comparing the linear accuracy of a dial micrometer with that of a precision bench micrometer is shown in Figure 1.

Fig. 2
Johansson type gages are inserted in the micrometer and the micrometer readings compared to the gaging thickness

Also in Figure 2 is shown a convenient and highly accurate method of determining the linear accuracy of the instrument at several points. Methods of determining friction, foot pressure and parallelism between the foot and the face upon which it bears can readily be developed to fit individual practices. The important points are: First, definite tolerances be set up for these factors; second, new gages be secured and used instruments maintained within such tolerances.

Optical thickness gages, as usually developed for plant service are fundamentally mechanical gages using optical magnifying methods, therefore the remarks on mechanical gages apply with the possible exception that due to the lesser mechanical multiplication, less friction is incurred, which permits the use of lower foot pressures. The desirability of using foot pressures lower than can be secured by first quality mechanical gages is somewhat questionable, due to the influence of minor surface projections such as upstanding fibers in fabric and surface irregularities on rubber stocks.

Very great multiplication can be readily secured in optical micrometers, hence the readability can be increased to any reasonable value desired. The use of two instruments of equal accuracy, but one having twice as large scale divisions as the other will result in plant practice with a far greater percentage of accurate measurements being made by the instrument having the greater readability. Accessibility, ease of use, appearance, and other similar factors will also affect the percentage of accurate measurements obtained in the plant.

Within the past several years the need for an instrument to continuously measure the thickness of moving sheet material has been realized and various instruments have been developed to accomplish this purpose, several of which have been marketed. The more accurate among these have used the gap caused by the non-magnetic material as a means of electrically determining the thickness of the material. This requires some method of support of the magnetic device on or near the surface of the moving material and hence precautions equivalent to those used with mechanical gages must be taken, if accurate indication of the stock thickness is to result. In this case since the most desirable application is at or near calenders, tubing machines or mills, variables such as temperature or plasticity, which affect the ability of the stock to resist deformation are at their worst. After considerable experimentation a method was evolved which gave thickness indications comparable to those secured on the same stock with dial micrometers. This method consists of mounting the magnetic element as shown in Figure 3 on four wheels similar to the rear wheel suspension of a six wheel motor truck. The wheels are so proportioned and loaded that depression into the stock is a maximum of (0.076 M. M.) .003 in., and the above mentioned unit area foot pressure of (70.3 grams/sq. cm.) 1 lb. per sq. in. is secured. Both experiment and extended use has confirmed the accuracy of continuous thickness indications secured in this manner. In fact, the accuracy is of the same order as is the accuracy of indications obtained in the more usual manner with dial micrometers.

In 1921 articles were published describing methods of measurement by variation of condenser capacity.[2] Numerous applications of this principle have been made among which is a commercially available instrument used to some extent in the paper and rubber industries. In this instrument the sheet material is passed between the plates of a condenser, the variation of capacity being indicated by changes of anode current from a thermionic valve in a connected oscillatory circuit. The advantages to be derived from the use of this instrument for the continuous indication of thickness of compressible material are due to the avoidance of mechanical contact with the material. Unfortunately the instrument indicates condenser capacity at the oscillation frequency and capacity is determined by many factors other than stock thickness. This accounts for the vendors' inability to calibrate the instrument directly in inches similar to all micrometers and the previously discussed magnetic gage.

The dielectric constant and volume of the material between the plates of a condenser determine its capacity. The dielectric constant of rubber as it comes from the mills and calenders is determined by the compounding ingredients, temperature, moisture content and the frequency used in the determination.[3] Power factor affects the

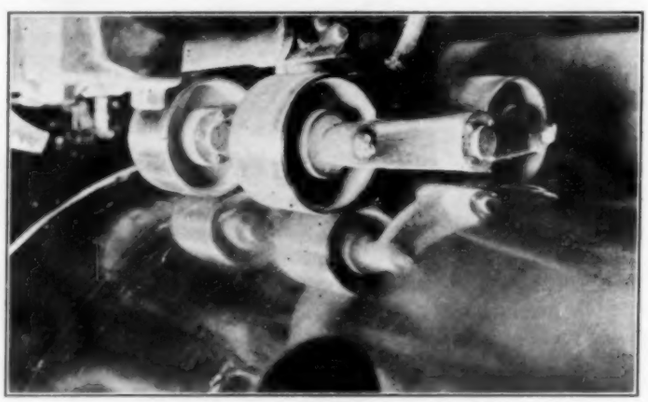


Fig. 3
Method of mounting the actuating element of continuous indicating gage to secure foot pressure equivalent to stationary dial micrometers

frequency and must be considered. It also is a variable of the enumerated factors. It is apparent that the indication is a complex function of many factors and to be of value as a thickness indicating device these factors must be held constant within close limits. In plant practice this desired condition cannot be attained as has been proven by experiment and as is recognized by the practical production operative, hence the instrument is of service only as a transfer device and requires constant checking and intercomparison with the more conventional absolute methods of thickness measurement or weighing.

Another method which offers possibility of combining the advantages of the magnetic and dielectric type gages was suggested by H. A. Thomas in 1923.[4] This method uses a high frequency oscillating circuit, but depends upon an inductive shunt rather than

capacity variation, thereby securing freedom from a number of instrumental errors inherent in the dielectric instrument.

The economic desirability of uniformity of measurement of the constituent parts, as well as the completed article of manufactured rubber and cotton materials is acknowledged by all. To secure even remote approach to the uniformity already attained on metallic machined articles requires compliance with the essentials discussed and rigid observance throughout the plant of a carefully prepared measurement technique. It is hoped that a more general recognition of the fundamentals of accurate measurement of compressible materials will result in a standardization of such important factors as foot pressure.

NOTES

1. *India Rubber World*, July 1, 1927, pp. 197-198.
2. *Engineering*, Sept. 9, 1921, and *Machinery* 28 No. 1, pp. 36-37, Sept., 1921.
3. *International Critical Tables*, Vol. II, pp. 273-274.
4. *Engineering* 135, pp. 138-140, Feb. 9, 1923.

A Correction

Mr. W. J. S. Naunton, of Imperial Chemical Industries, Ltd., Manchester, England, has called our attention to a correction which should be made in the translation of L. V. Wistinghasuen's paper on the "Consumption of Accelerator During Vulcanization," which appeared in THE RUBBER AGE of June 25, 1929.

In the paragraph following Table IV on page 320 the following ambiguous sentence occurs: "In the disappearance of the accelerator, a thermal decomposition as proposed by, among other, Naunton (Chem. Centralblatt II, 1315 (1925) for D. P. G. can be involved only to a very slight extent." This should be changed to read, "In the disappearance of the accelerator, thermal decomposition can be involved only to a very slight extent, as pointed out by Naunton (Chem. Centralblatt, II, 1315 (1925) among others."

Rubber-Mounted Motors

THE use of rubber in the mountings on electric motors has been highly developed by the Wagner Electric Corporation, St. Louis, Mo. Rubber bushings, backed up with steel on all pressures, are used to insulate the saddle base from the motor proper and little rubber bumpers have been placed on the governor weights and on the surface against which the governor weights rest.

The cushioning of the governor weights prevents any clicking sound when actuated into running or starting position. The rubber bushings insulating the saddle base are soft enough to absorb the small amount of mechanical vibration and yet are firm enough to keep the entire outfit practically rigid. Metal thimbles with large surfaces to avoid cutting the rubber bushings are clamped to the end plates with screws, thus securing the motor firmly in the saddle.

Wagner rubber-mounted motors were developed primarily for the refrigeration industry to comply with the demand for single-phase motors of ultra-quiet operation in starting, running and stopping, but the application of them has widened to practically all places where noise of any sort is not desirable, such as laboratories.

Canadian Import Order

An order-in-council of June 24, 1929, issued by the Canadian Commissioner of Customs, and effective June 1, 1929, requires imported rubber gloves to be marked with an indication of the country of origin, such as "Made in U. S. A." The goods must be marked, stamped, branded, or labeled with the indication of origin in legible English or French words, in a conspicuous place which shall not be covered by later attachments, and the marking must be as nearly indelible and permanent as the nature of the goods will permit.

New Tire Production Record in May

OUTPUT of pneumatic casings of all types by tire manufacturers in the United States reached a new record high figure of 8,145,368 during the month of May, according to statistics compiled by the Rubber Manufacturers Association, Inc. Shipments were lower than during April and, as a consequence, inventories rose to a new peak for the sixth time in successive months, totaling 17,848,580 casings.

The figures for May, as released by the Rubber Manufacturers Association, Inc., represent 75 per cent of the industry in the United States and have been brought up to represent 100 per cent in the following table:

TIRE AND TUBE PRODUCTION
(All Figures Represent Thousands)

	April, 1929			May, 1929		
Pneumatic Casings:	Prod.	Ship.	Invent.	Prod.	Ship.	Invent.
All types	7,884	7,294	16,929	8,145	7,184	17,849
Balloon	6,136	5,498	11,129	6,310	5,364	12,063
High Pressure Cord	1,740	1,780	5,723	1,829	1,809	5,714
High Pressure Fabric	7	16	78	6	12	71
Solid and Cushion Tires	51	58	183	53	57	178
Inner Tubes:						
All types	7,634	7,164	18,134	7,660	7,038	18,928
Balloon	5,835	5,229	11,159	6,115	5,060	12,223
High Pressure	1,796	1,930	6,960	1,540	1,973	6,689

June Rim Output Drops Sharply

PRODUCTION of automobile and other rims during June was lower than in May and considerably below the figures for June, 1928. During the past month the number of rims inspected and approved by the Tire & Rim Association, Inc., totaled 2,184,219 as compared with 2,574,224 in May and 2,429,453 in June of last year. The total for the first half of 1929 stands at 14,201,962 as against 12,974,039 for the same period a year ago. Balloon sizes represented 75.3 per cent of the total June rim output.

Rim Size	June 1929 No.	%	6 Mos. 1929 No.	%
MOTORCYCLE				
24x3 "CC"	1426	0.1	10464	0.1
24x3 Std.	.....	....	4668	0.0
26x3 "CC"	688	0.0	1971	0.0
26x3 Std.	.....	....	1035	0.0
28x3 "CC"	94	0.0	1114	0.0
28x3 Std.	.....	....	.....	....
18x3 SS	8546	0.4	14074	0.1
19x3 SS	3477	0.2	10516	0.1
Total	14231	0.7	43842	0.3
CLINCHER				
30x3½	16227	0.7	135424	1.0
31x4	765	0.0	765	0.0
Total	16992	0.8	136189	1.0
18" BALLOON				
18x3½	.....	....	.....	....
18x4	158172	7.2	828802	5.8
18x3.25	.....	....	75681	0.5
18x4½	54469	2.7	235912	1.7
18x5	30144	1.4	53628	0.4
Total	242785	11.3	1194023	8.4
19" BALLOON				
19x2.75	22721	1.0	218600	1.5
19x3½	56234	2.6	474041	3.3
19x4	295524	13.8	2719827	19.2
19x3.25	20104	0.9	181687	1.3
19x4½	83494	3.8	372063	2.6
19x5	15917	0.7	75170	0.5
Total	493994	22.7	4041388	28.4
20" BALLOON				
20x2.75	646526	29.6	3684632	25.9
20x3½	.....	....	62217	0.4
20x4	142866	6.5	1354265	9.6
20x4½	25631	1.2	236868	1.7
20x5	7403	0.3	224439	1.6
20x6	800	0.0	35783	0.3
20x6.75	.....	....	12206	0.1
Total	823226	37.7	5610410	39.5
21" BALLOON				
21x2.75	13668	0.6	107288	0.8
21x3½	42909	2.0	182612	1.3
21x4	10054	0.5	45934	0.3
21x4½	9281	0.4	28770	0.2
21x5	902	0.0	4046	0.0
21x6	1488	0.1	2505	0.0
Total	78302	3.6	371155	2.6
22" BALLOON				
22x3½	.....	....	.....	....
22x4	408	0.0	909	0.0
22x4½	405	0.0	901	0.0
Total	813	0.0	1810	0.0

Rim Size	June 1929 No.	%	6 Mos. 1929 No.	%
HIGH PRESSURE				
30x3½-23	329	0.0	16979	0.1
31x4 -23	1086	0.1	1086	0.0
32x4½-23	4541	0.2	29718	0.2
32x4 -24	3155	0.1	14774	0.1
33x4½-24	.....	....	.....	....
32x3½-25	.....	....	1056	0.0
33x4 -25	.....	....	.....	....
34x4½-25	.....	....	2181	0.0
Total	9111	0.4	65794	0.5
20" TRUCK				
30x5	411246	18.8	2157194	15.2
32x6	48672	2.2	280328	2.0
34x7	16471	0.8	102177	0.7
36x8	8537	0.4	71042	0.5
40x10	.....	....	304	0.0
Total	484926	22.2	2611045	18.4
22" TRUCK				
36x7	.....	....	1924	0.0
38x8	911	0.0	7110	0.1
Total	911	0.0	9034	0.1
24" TRUCK				
34x5	.....	....	3064	0.0
36x6	2163	0.1	23201	0.2
38x7	4471	0.2	30838	0.2
40x8	7260	0.3	41597	0.3
44x10	.....	....	246	0.0
Total	13894	0.6	98946	0.7
AIRPLANE				
8x3	.....	....	245	0.0
12x3	912	0.0	1669	0.0
14x3	81	0.0	101	0.0
16x3	43	0.0	43	0.0
18x3	.....	....	581	0.0
16x3½	35	0.0	1051	0.0
20x3½	1804	0.1	4068	0.0
20x4	1032	0.0	1546	0.0
21x4	.....	....	.....	....
20x5	10	0.0	221	0.0
20x6	166	0.0	534	0.0
20x8	18	0.0	428	0.0
24x10	.....	....	109	0.0
18x4 Cl.	933	0.0	7730	0.1
Total	5034	0.2	18326	0.1
GRAND TOTAL	2,184,219		14,201,962	

Tire Molds That Satisfy Particular Buyers

The thing that best recommends our mold service to you is the fact that many tire manufacturers who are most particular in their requirements are our customers.

All mold orders placed with us get close personal attention through the shop. Specifications are followed accurately. Deliveries are made on time.

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East Exchange at Annadale
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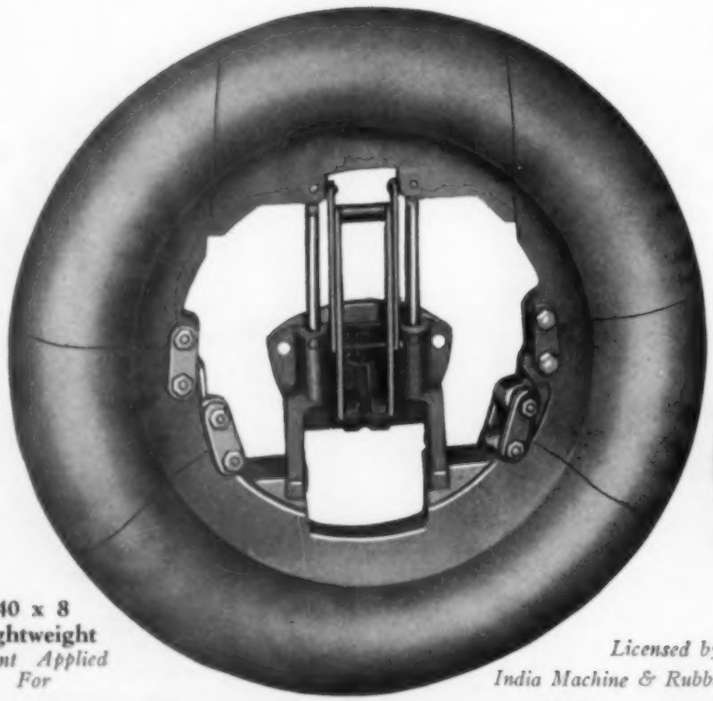
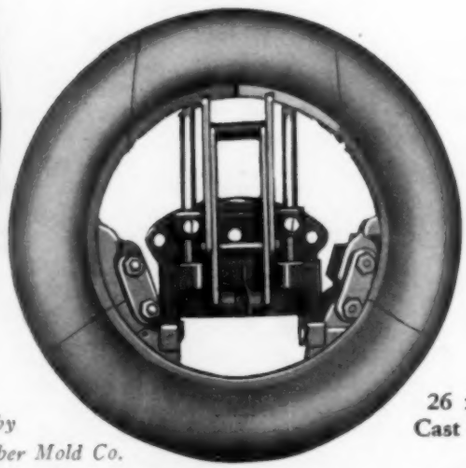
India Type—Cast Iron or Lightweight

Ring Type—Cast Iron or Lightweight



40 x 8
Lightweight
Patent Applied For



26 x 4
Cast Iron

Licensed by India Machine & Rubber Mold Co.

The BRIDGWATER MACHINE Co., Akron, O.

EDITORIAL COMMENT

The First Half of the Year

THE first half of the year has passed and while it is too early for the manufacturing companies to have made public their financial statements it is not hard to guess that the industry as a whole will show an excellent balance sheet. So far the year has been a prosperous one for almost all companies, with record breaking sales and high production schedules.

The half year has seen many changes in organization and personnel and several consolidations but expansion has been the salient policy. Plant capacity have been increased in a large number of the companies. New branch plants have been constructed. The major companies, almost without exception, have continued their policies of decentralizing their manufacturing units by erecting complete plants in logical and widely scattered distributing centers.

What the second half of the year will hold for the industry is problematical but no clouds have appeared thus far on the horizon. It is fully expected and discounted that tire production will not continue at the record heights of the first six months but the curtailment will not be severe but will be merely following the cut in automobile production. The one branch of the industry which is emerging from the "doldrums" and is looking with high hopes at the fall season is the footwear industry.

International Standardization

INTERNATIONAL standardization is the next logical step in the present trend towards domestic standardization. International standardization, of course, will apply ultimately to rubber products. This movement is a far-reaching development in world industrial activities. The organization meeting of the first board of directors of the American Standards Association, a national federation of 40 technical, trade and industrial organizations and government departments will be the initial step in the movement. Recognition by industrial executives of the tremendous savings to be made through standardization led to the recent reorganziation of the Association to place control of standardization policies into the hands of industrial leaders and promote the establishment of international standards specifications. The most important question to come up before the board of directors is that of American participation in international standardization activities. The International Standards Association, which maintains an office at Baden, Switzerland, has formally invited the American Standards Association to its membership.

International standardization cannot but be an excellent thing for the industry and any move in that direction is to be commended.

Those Declining Shipments

THE British press seems to be taking some solace in the fact that shipments of crude rubber from Malaya are showing a decline. They see in this situation prospects of an improved market.

Whether the drop in these shipments is actually due to a failure on the part of the estates to reach their expected production or whether accumulations are being made on the estates in anticipation of better prices, it is too early to determine. Reports from practically all rubber growing areas would indicate general favorable conditions, and in view of the production programs for the individual estates as given out by their chairmen in the many recent annual meetings in London, something unexpected must have necessarily happened if the decline in shipments continue.

Accordingly too much weight should not be given to these recent figures. If the estates are holding rubber for better prices, they are likely to find themselves in the same position as when they operated under the restriction policy, with their Dutch neighbors reaping the benefit of steady sales. The best authorities in the trade have predicted that the production of crude rubber will very nearly coincide with this year's consumption. Such a situation would be most gratifying and any movement such as holding the stocks is to be deplored.

Stabilization of price which would come naturally through an equalization between production and consumption would be the greatest factor in maintaining prosperity in both the producing and manufacturing industries. At the present market price, the planters should not find it difficult to make a satisfactory profit, and certainly the manufacturers cannot complain of rubber around 22c.

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NEWS of the INDUSTRY

Financial—Business
Building Operations
Personals
New Products

WILDMAN TIRE PLANT TO BE SOLD AT AUCTION

The land, buildings and equipment of the Wildman Tire & Rubber Company, Port Clinton, O., have been authorized to be sold at public auction, on August 15, by the United States District Court for the Northern District of Ohio, as a result of bankruptcy proceedings. The auction will be conducted by the Industrial Plants Corporation, New York City, and will be held on the premises of the defunct company at Port Clinton, starting at 10:30 a. m.

The land and buildings will be offered as a whole and also in separate parcels to suit bidders. The machinery, tools, equipment, furniture, etc., will be sold piece by piece and not as a whole. The sale will be without limit or reserve.

The plant, which is of modern construction and layout, including practically new machinery of the latest type, is situated on Lake Erie, twelve miles from Sandusky, O., and is served directly by the main line of the New York Central Railroad. The plant as equipped at present has a capacity of approximately 1,200 tires and 2,000 tubes per day.

AETNA RUBBER COMPANY MOVES HEADQUARTERS

The main office and part of the manufacturing equipment of the Aetna Rubber Company has been moved from the company's Cleveland plant to the Ashtabula plant. The company has been expanding its Ashtabula factory with the addition of several new buildings. New machinery has been installed and it is stated that the number of products of the company's line will be greatly increased.

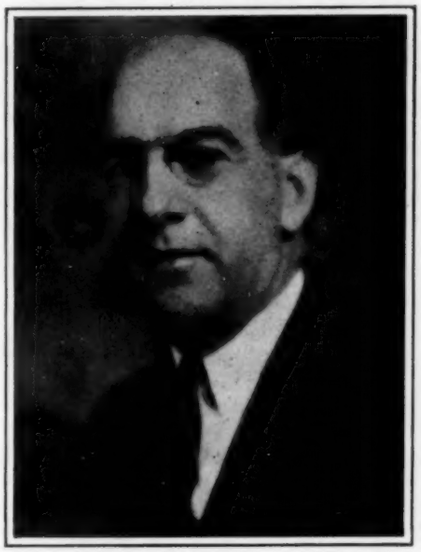
When the Ashtabula, O., plant was first started, hard rubber battery boxes were the principal product of the company. Since then a variety of rubber floor coverings have been added and other products will be introduced later.

U. S. RUBBER RECLAIMING EMPLOYES ARE INSURED

Group life insurance protection has recently been acquired by employes of the U. S. Rubber Reclaiming Co., Inc., Buffalo, N. Y., through a policy issued by the Prudential Insurance Company of America. The total amount of the policy involved is $377,000, covering 330 lives.

The insurance is of the contributory type, each worker being insured in amounts ranging from $1,000 to $4,000, according to the rank or position held, and the premiums are shared by both the employing company and the workers themselves.

Republic Head Resigns



J. H. Connors, president and general manager of the Republic Rubber Company, Youngstown, O., who announced his resignation on July 16 to take effect immediately. Beyond the fact that Mr. Connors is leaving for a vacation in the east, no announcement of his future plans was made. The resignation of Mr. Connors was received with regret by the organization as he has been the central figure in the forward progress of the company since he went to Youngstown with the late E. H. Fitch in 1922.

Mr. Connors served his apprenticeship in the Boston, Mass., branch of the B. F. Goodrich Company under the supervision of E. E. Leach. In 1916 he was promoted by Goodrich to the position of manager of Diamond mechanical goods sales at Philadelphia, where he remained until he was transferred to company headquarters at Akron, O. The Philadelphia branch was at that time under the district managership of the late E. H. Fitch. In January, 1920, Mr. Connors assumed the position of manager of Diamond mechanical goods sales for the Akron sales division and later was given jurisdiction over tire sales in the same division.

The association of Mr. Fitch and Mr. Connors led them to undertake jointly in January, 1922, the rehabilitation of the Republic Rubber Company, then in receiver's hands. In his career with this company, Mr. Connors became successively assistant general manager, assistant to the president, vice-president and general manager, and, in December, 1927, president.

GOODRICH CONTRACTS FOR BIG CHICAGO WAREHOUSE

A ten-year lease, involving approximately $835,000, was negotiated last month whereby the B. F. Goodrich Company will house all of its Chicago activities in the large Pennsylvania Railroad warehouse at Polk, Canal and Taylor streets. The rubber company has leased 167,000 square feet of floor space from the Western Warehousing Company, a subsidiary of the Pennsylvania Railroad. The lease carries an option of renewal for five years.

The Goodrich company at present has general offices at 1925 South Michigan avenue, Chicago, and 167,000 square feet of warehouse space in the central manufacturing district. All of the interests will be consolidated in the new quarters.

RUBBER FACTORY BUILT AT LONG BEACH, CAL.

A rubber plant, the first unit of the new factory of the Perfect Caster Manufacturing Company, Long Beach, Cal., is rapidly being completed and is scheduled for occupancy by August 25, according to W. R. Darnell, Sr., president of the concern. The unit will manufacture all the rubber treads required in the making of the Darnell perfect casters, the principal product of the company.

The building will be equipped with mills and calenders together with vulcanizers and tubing machines and other equipment which will permit the complete manufacture of the rubber treads under one roof.

Kalbfleisch-Cyanamid Merger

The reorganization of the Kalbfleisch Corporation with the American Cyanamid Company through the consolidation of the assets of the Kalbfleisch Corporation with the assets of the American Cyanamid Company which was heretofore recommended by the boards of directors of each corporation has now been ratified by the stockholders of the respective companies. It is planned to have the reorganization completed before the end of July and the Kalbfleisch Corporation will continue to operate as a separate organization and no change in management is contemplated.

Tire Patch Makers Organize

Representatives of seven companies in that industry met at Akron, O., on July 8 to form the Tire Patch Manufacturers' Association. The new organization will attempt to foster co-operation, better trade practices, co-operative buying and co-operative advertising. G. E. Blaylock, of the Blay-Lock Manufacturing Company, Baltimore, Md., was elected president of the group.

LINEAR PACKING TAKES MORE PRODUCTION SPACE

More than 10,000 square feet of additional production space has been acquired by the Linear Packing & Rubber Company, Philadelphia, Pa., with the purchase of its new mill on the main line of the New York division of the Pennsylvania Railroad and the plaza of the new Tacony-Palmyra bridge.

Facilities are now afforded for the full control of all crude rubber needed, together with equipment for producing the necessary rubber cements used in packing manufacture. The new plant also places Linear in a position to make molded rubber items for the oil industries, in addition to its present line of packings, as well as many special types of molded rubber goods.

RUBBER BUYERS ATTEND OUTING IN NEW ENGLAND

Several buyers of rubber manufacturing companies attended the summer outing of the New England Purchasing Agents' Association held at Sandy Burr Country Club, Wayland, Mass., on June 26. Among the prizes donated for various sports events were Hood tires, Converse boots and Cambridge sport shoes.

Those in attendance from the rubber industry included William Robbie, Cambridge Rubber Company; R. C. Kelley, Converse Rubber Company; Charles L. Sheldon, Hood Rubber Company; Frank Ward, Panther Rubber Company; and John Renardo, Stowe & Woodward.

First Shipment From Gadsden

Although the plant of the Goodyear Tire & Rubber Company at Gadsden, Ala., has not been officially opened, the first carload of tires from this southern plant was recently dispatched to the company's distribution branch at Atlanta, Ga. Production at the new plant is estimated at 1,000 tires per day and will be increased to 5,000 within a few months.

Hood Leases New York Store

The Hood Rubber Products Company, of Watertown, Mass., has leased the store, basement, sub-basement and first and second lofts in 148-152 Duane street, New York City. The lease is for a term of years at an annual rental of $18,000.

Trade Opportunity

The Viel-O-Phone Company, of Bombay, India, manufacturers of talking machines and phonograph records, are seeking to get in touch with rubber manufacturers or suppliers of rubber parts used in the manufacture of phonographs. They are particularly interested in rubber goods used in phonographs such as rubber gaskets for sound boxes, rubber cushion legs for cabinets, rubber washers and rings, etc.

The Rubber Exchange of New York, Inc., has issued a new edition of its by-laws and rules, handsomely bound in composition rubber covers.

Goodyear Sales Contest

The Goodyear Tire & Rubber Company has inaugurated a novel sales contest among its tire dealers throughout the country, tying up its dirigible activities with tire retailing in an unusual manner. The company has assigned to each dealer a mythical Zeppelin, scheduled to leave Akron July 1. Each sale of a tire or tube by a dealer carries his "Zeppelin" so many miles on its course across the country to the Goodyear Los Angeles factory and around the world, touching in imaginary flight the Goodyear plants at Australia, England, Gadsden, Ala., Massachusetts and Canada. Prizes will be awarded in the unique contest, which, in addition to stimulating sales, helps to familiarize dealers with the various Goodyear plants throughout the world and with the company's airship building activity.

Government Specifications

The Bureau of Standards of the United States Department of Commerce has just issued a bulletin, giving the government master specification No. 588 on braided water hose, promulgated by the Federal Specifications Board on December 8, 1928. The Bureau has also published an alphabetical index and numerical list of all United States government master specifications, complete to June 30, 1928. Approximately 35 rubber items are listed in this index, which is designated as Circular of the Bureau of Standards No. 371.

Thermoid Plans Addition

Contracts have been awarded covering an extensive addition to the plant of the Thermoid Rubber Company, Trenton, N. J., to house additional equipment and machinery in the manufacture of brake lining. The building, which will be 100 by 170 feet in size, will be of fireproof concrete, brick and steel construction. The structure will be located adjacent to the present asbestos plant, which is just off First street, near the original Thermoid plant in Hamilton Township.

Belmont Rubber to Rebuild

The Belmont Packing & Rubber Company, Philadelphia, Pa., manufacturer of rubber gaskets and other mechanical rubber goods, has approved plans for immediate rebuilding of a portion of its plant at Sepviva and Butler Streets, recently destroyed by fire with a loss reported in excess of $125,000, including equipment. The building contract has been awarded to the George Kessler Contracting Company.

Murray Sued for Broadcasting

The radio broadcasting station, WOAX, at Trenton, N. J., has instituted suit in the Mercer circuit court against the Murray Rubber Company to recover $1,100 alleged to be due for broadcasting that firm's products for a number of weeks.

General Store in Chicago

The General Tire & Rubber Company has purchased the garage property at 6050 Broadway, Chicago, Ill. After making extensive alterations, the company will occupy the space for use as a retail tire store.

MOHAWK RUBBER COMPANY BEGINS STOCK DIVIDENDS

Stockholders of the Mohawk Rubber Company have voted to increase the capital stock of the company from 115,000 to 125,000 common shares. The addition 10,000 shares are necessary to meet dividend requirements, the company's common stock having been placed on a quarterly basis of one per cent in stock and 75 cents in cash.

Stock dividend requirements total slightly more than 1,000 shares each quarter, and the increase just voted upon will take care of the requirements for several years.

General Business Gains

William O'Neil, president of the General Tire & Rubber Company, has stated that the company had the largest six months' business in its history in the first half of the fiscal year ended May 31. Export business during the period increased 46 per cent over the corresponding period of the preceding year. Domestic shipments in the same period increased 20 per cent.

Goodyear to Redeem Bonds

The Goodyear Cotton Company of Canada, Ltd., has called for redemption on October 1 all of its 6 per cent bonds at par and interest. Holders of such bonds will receive the right to exchange them for others of a new $2,000,000 issue, details of which will be announced later.

RUBBER COMPANY STOCKS LOWER DURING FORTNIGHT

With very few exceptions, stock issues of leading rubber companies were lower at the end of the past fortnight, with some showing a tendency to drop still further. New lows for 1929 or longer were made by Miller common and preferred, Norwalk common and Seiberling common. Although the last sale price for India was 48½, the closing bidding was only at 36½, below the stock's lowest figure for the current year.

Despite reports of a good financial statement for the first half, Goodrich closed six points lower and within three points of its 1929 low. Price quotations on the shares of the leading rubber companies on July 20 and the high and low figures for the year are as follows:

	Last Price		High	Low
	July 20	July 2	—1929—	
Ajax	5⅛	6	11¼	4½
Falls	6	5	11⅜	5
Faultless	30	32	39⅞	32½
Firestone	260¼	270	309	220⅛
do. 6% pfd.	108½	110	111	108
Fisk	8	8½	20⅛	7⅝
do. 1st pfd.	47	43½	72½	40¼
General	270	280	298	236
do. pfd.	95	95	102	95
Goodrich	75⅝	81¾	105¾	73
do. pfd.	111½	112	115⅛	111
Goodyear Com.	119⅝	129½	154½	112
do. pr. pfd.	101⅞	101	104⅞	101
Hood	24	19¼	27¼	18¼
India	48½	51	73	39
Intercontinental	9½	8⅝	14¼	8⅛
Kelly Springfield	13⅛	15½	24	11
do. 1st pfd.	75	75	100	75
Lee	13½	14¼	25	10
Miller	17½	18	28¾	17½
do. pfd.	55	62	83	55
Mohawk	45	44	66	50
do. pfd.	81	81	90½	81
Norwalk	2¾	2¾	6¼	2½
Seiberling	34⅞	39	65	33
do. pfd.	104	104	107⅞	104
U. S. Rubber	50	52¼	65	42
do. pfd.	75	80⅜	92½	73

GARLOCK PACKING OPENS ITS OWN POWER PLANT

The Garlock Packing Company, makers of rubber and other mechanical packings, have started operation of a new power plant at their factory at Palmyra, N. Y., which will eliminate outside purchases of power and is expected to produce savings equivalent to 23 cents a share annually on 200,000 no-par capital shares outstanding.

Ground has also been broken at Palmyra for a new monitor-type factory building of 10,000 square feet floor space. Construction is scheduled for completion next month, with operations expected to start in September. The present plant is now operating nights and overtime and the additional space which the construction will afford is designed to reduce the amount of overtime work.

W. C. BLAKE HEADS U. S. INDUSTRIAL TIRE SALES

The appointment of William C. Blake, as sales manager of truck and bus tires sales of the United States Rubber Company was recently announced. Mr. Blake is a newcomer to the "U. S." organization and previous to his appointment was head of truck tire sales for the Kelly-Springfield Tire Company for the past five years. He has been associated with rubber tire sales for the last 19 years. Mr. Blake succeeds C. K. Whidden, who has resigned to engage in private business.

New Foote Speed Reducer

The Foote Brothers Gear & Machine Company, Chicago, Ill., is offering to the rubber manufacturing trade a series of various types of speed reducers by which a total reduction of 19,025,344.8 to 1 can be obtained. The slow speed shaft of the series makes .005514 revolutions per hour, or one complete revolution in 185 hours, which is one week and 17 hours. The movement of the final shaft is so slow that neither the hand or the eye can detect any movement. These reducers were on exhibit at the recent Chemical Industries Exposition at the Grand Central Palace, New York City, and will be exhibited at other shows during the year.

Pencil Makers Organize

Manufacturers of wood sheathed lead pencils representing approximately 98 per cent of the productive volume, met in New York City recently and organized the Lead Pencil Institute, Inc. Eberhard Faber of the Eberhard Faber Pencil Company was elected chairman of the board of trustees, and Nelson B. Gaskill, former chairman of the Federal Trade Commission, was chosen president. Headquarters have been located at 16 Jackson Place, Washington, D. C.

Essex Rubber at Capacity

The Essex Rubber Company, Trenton, N. J., is now operating 24 hours a day in all departments. The company has received a large increase in orders for athletic rubber footwear.

FIRESTONE PLANE AT OPENING OF AIR-RAIL LINE

The "Firestone," the new tri-motor Ford plane of the Firestone Tire & Rubber Company, at the ceremonies attending the opening of the coast-to-coast 48-hour air-rail service at Columbus, O., together with the dedication of the new municipal airport in that city.

Kelly Plant Dismantled

The remaining machinery of the former Akron plant of the Kelly-Springfield Tire Company has been taken over by L. Albert & Son, Trenton, N. J., and is now being offered for sale along with other equipment from the dismantled Perfection, Racine Horseshoe and Raymond Rubber companies plants. The equipment includes a large line of mills, calenders, tubers, presses, washers, tire and tube equipment and miscellaneous machinery located in Albert & Son's Trenton and Akron warehouses.

Pharis Enlarges Plant

The Pharis Tire & Rubber Company, Newark, O., has completed the remodeling and enlarging of its plant at the cost of nearly $500,000. New equipment to the value of $250,000 has been installed which is expected to advance the capacity of the plant to nearly 5,000 tires per day. Three eight-hour shifts are working to keep up with the present demand.

New Whitehead Catalog

The Whitehead Brothers Rubber Company, Trenton, N. J., has issued its annual edition of "Whitehead Wisdom," a pamphlet describing the various rubber goods made and distributed by the concern. The new edition features a picture of William A. Howell, superintendent of the company, who has been affiliated with the organization for the past 50 years.

Carter to Build Factory

The Carter Rubber Products Company, Detroit, Mich., manufacturer of rubber sponges and miscellaneous rubber goods, is reported to be planning a new plant unit on North Oak street, Durand, Mich. The new factory, it is stated, will be a one-story structure and will most more than $40,000, including equipment.

Opens Chain of Tire Stores

Montgomery Ward & Company have announced the opening of a chain of ten retail tire stores in Chicago, according to George B. Everitt, president. The stores will handle accessories as well as tires. This is the first move of the company in its new policy of establishing retail outlets through chain stores in addition to its huge mail order business.

GENERAL TIRE OCCUPIES BRANCH AT KANSAS CITY

The General Tire & Rubber Company branch at Kansas City, Mo., has moved into its new $250,000 home in that city. The building, a three-story stone and brick structure, is located on the west side of Baltimore avenue near 15th street.

The main building is 35 by 122 feet in size with a one-story wing, 90 by 20 feet, reaching to the north. This wing was set back 72 feet on the lot, leaving space in front for a service court. This section of the building, together with the first floor of the main building, is occupied by the Corrigan Tire Company, the General tire distributor for Kansas City.

Goodrich Branch at Charlotte

A new building, being erected for a subsidiary of the B. F. Goodrich Company at Charlotte, N. C., is near completion. The structure is two stories high, of cream brick construction, and thoroughly modern in every respect. It will be used as headquarters for a general tire and service organization, with gasoline, oil, batteries and tires in stock.

New Firestone Tire Store

The Firestone Tire & Rubber Company will build a one-story building at Austin, Minn., this summer as a part of the company's chain of super service stations throughout the country. A second story will be added to the building at a later date, it is reported.

Stokes Adds to Factory

The Joseph Stokes Rubber Company, Trenton, N. J., is erecting a new addition to its present plant. The new structure will be 50 by 100 feet in size and one and a half stories in height. The company is now operating to capacity.

Chicago Branch for India

The India Tire & Rubber Company has opened a new branch at Chicago, Ill. The building, which is located at 1523 South Michigan avenue, affords approximately 10,000 square feet of space.

Rubber News Around the World

PHILIPPINE TIRE TRADE DOMINATED BY AMERICA

The market for automobile tires in the Philippine Islands is practically monopolized by American tire manufacturers, according to the United States Department of Commerce. There is no local production of any sort. All the popular American-made automobiles are sold in the Philippines and in determining the kinds of tires used, one need but turn to the kinds used in America.

According to estimates of local dealers in tires, the average replacement includes about 6 tires a year per truck or bus and about 4 for passenger vehicles. The last annual registration figures of motor vehicles in the Islands showed the following: Passenger cars, 19,791; busses, 2,850; trucks, 6,627; funeral cars, 75.

RUBBER MANUFACTURING GROWING IN BR. MALAYA

New developments in rubber manufacturing as a Malayan industry is reported by the United States Department of Commerce In addition to the well-known firm of Tan Kah Kee, whose manufacture of rubber soles, rubber soled shoes and other items has reached large proportions, there is also the Wilkinson Process Company, near Kuala Lumpur, which produces special rubber linings for piping and the Singapore Rubber Works, a Dutch company with a capital said to be $3,000,000 Straits Currency, which makes rubber soles, matting, tiling, and a variety of novelties and requires about 100 tons of rubber per month.

Rubber Flowers Bring $500

A basket of rubber flowers sent by Queen Mary to the recent Royal Ascot Ball at Windsor was auctioned for the benefit of the King Edward VII Hospital fund, bringing a price of £100, or nearly $500. The basket, which was of silver, contained exquisite roses, sweet peas in perfect bloom and trailing smilax, and few persons present realized that the flowers were made of rubber.

Rubber Beach Interests Britain

British rubber men have shown considerable interest in the rubber beach at Monte Carlo. Many of the beaches of the United Kingdom are covered with pebbles that are harmful to the feet and it is believed that a similar rubber covering would keep many persons from leaving Britain for the continental resorts.

New Reclaimed Rubber Journal

The first issue of a new foreign publication devoted to the reclaimed and scrap rubber trade, called *Dechets et Regeneres*, has made its appearance in Paris. The editorial offices are 16 Rue des Saussaies.

American Makes Comprise 89% of the World's Cars

It is estimated by the Automotive Division of the Department of Commerce that out of a grand total of 32,028,584 automobiles in world circulation on January 1, 1929, the American makes comprised 28,551,504, or 89.1 per cent. This includes 24,567,003, or over 91 per cent of the passenger cars and 3,984,501, or 79.3 per cent of the trucks and buses.

Since the American car absolutely dominates the market in the United States and Canada, one gets a much better idea of just how the American vehicle lines up with its foreign competitors in overseas markets by considering its world position, with the exclusion of these two countries. Outside of the continental United States and Canada there were in operation 6,336,833 automobiles, of which number about 2,880,989, or 45.46 per cent, were American makes. Of the total passenger cars, those of American make totaled 2,231,609, or 47.95 per cent; of the trucks and buses, 649,380, or 38.58 per cent, were products of American plants.

PLANT BLAST KILLS TEN IN CZECHO-SLOVAKIA

A short circuit which ignited solvent vapors in the rubber dipped goods factory of Hornes & Company at Bratislava, Czecho-Slovakia, was responsible for an explosion recently which instantly killed ten women workers and severaly injured several others. Many of the dead had their limbs torn off by the force of the blast, and all were burned beyond recognition.

All telephone wires around the factory were fused, and messengers had to run on foot to call the fire and police departments. At the time of the explosion, thirty women had been working in the room.

HENLEY'S REPORT SHOWS PROFITS OF $1,700,000

W. T. Henley's Telegraph Works Company has reported for the year ended March 31, 1929, a profit of £354,567, or more than $1,700,000, as compared with earnings of £342,291 for the year previous. There has been a corresponding increase in the amount retained as net profit, this being £294,237 as against £283,074 in the twelve months ended March 31, 1928. The net profit for the past fiscal year constitutes a record for the company, despite the fluctuations of the rubber market.

The directors report that the improvement in the affairs of the subsidiary, Henley's Tyre & Rubber Company, has continued.

AMERICAN AUTO TIRES LEAD IN SWEDISH MARKET

The imports of automobile casings into Sweden for the last thee years are estimated by the United States Department of Commerce to be as follows: 1926, 121,417 casings; for 1927, 159,676; and for 1928, 150,472 casings.

There are practically no automobile casings exported from Sweden. While there are two domestic manufacturers neither is engaged in export.

It is also estimated that during 1928 there were produced in Sweden not more than 25,000 automobile and pneumatic truck casings. It is not possible to secure any kind of an official figure and local manufacturers will not disclose data of this nature. Roughly it can be stated that the production of the Swedish Gislaved factory did not exceed 15,000 casings and that of the Trelleborg plant about 10,000 casings.

Approximately 50,000 tires were sold in Sweden during 1928 as original equipment, the bulk of this business going to an American company which practically monopolized sales to the Stockholm assembly plant of General Motors. At this plant about 12,000 cars were assembled during 1928.

It is estimated that the consumption of casings per car in Sweden is at the rate of 1½ per year. This average probably is lower than most countries which is accounted for by the fact that the driving season is materially restricted during the winter months and also is due to the prevalent practice of making extensive repairs on tires.

Eastern Rubber Will Build

The Eastern Rubber Company, Ltd., Actonvale, Que, is. reported to be preparing to enlarge its plant facilities by a large additional structure. The new building will involve an expenditure of approximately $50,000.

Imports of golf balls during May totaled 346,100, valued at $98,809, a unit value of 28.5 cents a ball as compared with 30.7 cents in April and 38.4 cents in March. In May, 1928, 391,136 balls were imported, valued at $157,805.

CATALPO
for
Cushion Stocks

Names in the News

PATRICK H. HART, who was until recently treasurer of the Goodyear Tire & Rubber Company, has joined the interests of the General Tire & Rubber Company as vice-president of the General Investment Company, a subsidiary corporation, according to an announcement by President O'Neil of General. Mr. Hart resigned from Goodyear in February and at that time announced no plans for the future other than that he would continue to make his home in Akron.

DR. W. B. MCCALLUM, chief botanist of the Intercontinental Rubber Company and subsidiaries with headquarters at Salinas, California, has been visiting G. H. CARNAHAN in New York and DR. WILLIAM

DR. W. B. M'CALLUM

CROCKER, Director of the Boyce Thompson Institute for Plant Research at Yonkers. Dr. McCallum is the outstanding authority on guayule shrub, having been associated with Intercontinental in its study and development for the past nineteen years. He is returning home via Chicago where he will visit his Alma Mater, the University of Chicago.

LIEUTENANT T. G. W. SETTLE and ENSIGN WILFRED BUSHNELL, naval balloonists, who established a world's record for long distance balloon flying to win the national race from Pittsburgh in May, were awarded the Litchfield Trophy on June 24. This cup is a prize posted by P. W. LITCHFIELD, president of the Goodyear Tire & Rubber Company, to encourage the development of lighter-than-air transportation.

HARRY V. DEWITT, branch manager of the Fisk Rubber Company at New Orleans, La., was the chief speaker at a dinner given to 70 Fisk tire dealers of the vicinity at the Jung Hotel. He told the retailers of the manufacturing, merchandising and advertising schedules of the company.

EDWIN L. NUTE has joined the Converse Rubber Company, Malden, Mass., as plant engineer. Mr. Nute was engineer of this plant from 1914 to 1927, since which time he has been engaged in installing rubber machinery at the Middleton, Mass., plant of the Boston Blacking Company and the Arlington Rubber Company factory at Dorchester, Mass.

NORMAN F. HERTZER has been named a member of the staff of commercial operations in lighter-than-air division of the aeronautics department of the Goodyear-Zeppelin Corporation. He has been associated with the Goodyear organization since 1915, at which time he became a salesman at the Louisville branch of the Goodyear Tire & Rubber Company. In 1920 he was sent to Singapore to do export work, remaining there two years.

HARVEY S. FIRESTONE, JR., has been named a director of the National City Bank, Akron, as a result of the action of the stockholders to approve plans for the merger of that institution with the First Trust & Savings Bank.

S. G. CARKHUFF, secretary of the Firestone Tire & Rubber Company, has been appointed a member of the Akron City Planning Commission to succeed C. A. MYERS, superintendent of engineering of the Firestone company, who will be absent from Akron for some time in connection with the Firestone plant at Los Angeles.

O. E. MESKE has been appointed by the Northern Rubber Company, Akron, O., as general representative in Pennsylvania, eastern New York and western New England.

FREDERICK W. NASON, managing director of the Goodyear Tire & Rubber Company branch at Java, has sailed for the Far East after a brief visit to Akron to confer with officials of the export department.

E. S. SARGEANT has arrived at Kitchener, Ont., to take up his new duties as vice-president and general manager of the Canadian Goodrich Company, Ltd. Mr. Sargeant has been connected with the B. F. Goodrich Company at Akron and with the Pacific Goodrich Company at Los Angeles for the past 14 years.

CHARLES MCKONE has taken up the duties of his new position in the production department of the Englebert Tire Company, Belgium. He is a resident of Millersburg, O.

W. P. CLINE, formerly vice-president of the Falls Rubber Company, Cuyahoga Falls, O., has been elected president of the company, succeeding R. P. Bremer, who has been chosen chairman of the board of directors. F. E. DIXON has replaced Mr. Cline as vice-president. G. D. KRATZ, former chairman of the board, resigned his position early this month.

L. M. SIMPSON, general sales manager of the tire department of the United States Rubber Company, attended a recent conference of Pacific Coast and Rocky Mountain branch managers of the company at Denver, Col.

L. SOUTHMAYD has been elected managing director of the newly organized Tire Dealers League of America. He was formerly connected with the Fisk Rubber Company.

A. F. EGGLESTON, formerly departmental head of the Fisk Tire Company, Inc., Chicopee Falls, Mass., has been appointed assistant to the executive vice-president, FRANK K. ESPENHAIN. J. E. MULLANEY,

A. F. EGGLESTON

formerly assistant to Mr. Eggleston, has assumed the latter's former duties. H. C. HANSON has been promoted to the position of assistant to the vice-president in charge of manufacturers sales.

H. G. MULLICAN is now representing the Northern Rubber Company, Akron, O., as a salesman in several of the southern states.

HARVEY S. FIRESTONE, SR., president of the Firestone Tire & Rubber Company, was one of the speakers at Jamestown, N. Y., on July 24 in commemoration of the 100th birthday anniversary of LEWIS MILLER, one of the founders of Chautauqua. The late Mr. Miller's daughter, MRS. THOMAS A. EDISON, also spoke.

CLIFFORD H. OAKLEY, president of the Essex Rubber Company, Trenton, N. J., recently entertained a number of guests on the scout ship *Ballantrae* on the occasion of the boat races on the Delaware River near Philadelphia. Mr. Oakley is head of the Boys' Sea Scouts organization in Trenton.

WILLIAM H. SAYEN, president of the Mercer Rubber Company, has returned to his office in Trenton, N. J., after a trip to the Pacific coast on business.

Current Crude Rubber Items

RUBBER FUTURES DROP IN EXCHANGE TRADING

Brief Rally on July 8 With Heavy Sales Is Followed by Steady Decline and Falling Off of Interest in Remainder of Period

RESPONDING to advances in the crude rubber markets of London and Singapore, rubber futures advanced from 90 to 130 points on July 8 in the sharpest trading that the Rubber Exchange of New York has seen in several weeks. Sales were brisk throughout the day, reaching a total by the close of 1,800 contracts, equivalent to 4,500 long tons. The advance in prices started at the opening, when higher cables from London and an announcement of a decline of nearly 1,000 tons in London rubber stocks sent prices to levels 50 to 70 points above the close on Saturday, July 6. Prices whirled upward rapidly for a few moments under the force of speculative buying, believed to represent short covering, after which they reacted about 20 points, but still higher prices were made in the afternoon.

That day, however, was the single bright spot in an otherwise featureless fortnight. The trading sessions following saw a steady decline in price quotations and an equally steady falling off of interest and activity until on July 20 only 57 sales were recorded. The closing spot quotation was 20.60 cents a pound as against 22.40 cents on July 8 and 21.00 cents at the close of the preceding period.

The table below indicates the daily fluctuations in prices on the Exchange and the daily volume of sales.

Sunday Urged as Rest Day for Rubber Trees

Sunday, as a day of rest for every rubber tree and plantation worker, is being advocated by the Malayan press as not only desirable from the standpoint of the native labor on humanitarian grounds but also as a measure for holding down production and conserving the life of the rubber trees. The *Malaya Tribune* editorially endorses the idea and urges the various plantation associations to take up the question.

AFRICAN RUBBER YIELD IS NOT SATISFACTORY

In a bulletin on "Yields of Funtumia Rubber on the Experiment Stations from 1906-1928," just issued by the Department of Agriculture of the Gold Coast, G. H. Eady, superintendent of agriculture for the colony, states that while the rubber obtained from Funtumia is of high quality, it is unsuitable as a plantation product on account of low yield and the length of time that must elapse between tappings.

The highest calculated yield per acre is only 58 pounds of dry rubber, whereas Para trees will yield up to 400 pounds per acre annually. In addition, the older the Para tree the greater the yield (for a considerable number of years), while after Funtumia has once been tapped the yield annually decreases. Production of Funtumia rubber is almost entirely carried out by the African peasant-farmer.

MALAYAN PLANTERS HOLD ANNUAL LONDON DINNER

A spirit of hopefulness as to the rubber industry characterized the speeches made at the annual dinner of the Incorporated Society of Planters, held recently at the Piccadilly Hotel, London, under the chairmanship of the Hon. J. S. Aster, a member of the Federal Council of the Malay States. The Right Hon. L. S. Amery, former Colonial Secretary, was the chief guest, and the company well represented the British rubber world.

P. J. Burgess, past chairman of the Rubber Growers' Association, proposing the toast of "The Rubber Industry," said that the industry was in a state of transition; that research in the last ten years had shown them how to make selection of rubber trees so as to increase the yield fivefold, which opened up a big vista for the future, when rubber might be produced at a price which would alter all perconceived conceptions of the uses to which it might be put.

Mr. Amery, responding, said that the development of the industry was a wonderful tribute to British enterprise.

Sir George Maxwell, late chief secretary of the Federated Malay States, said that whereas research has been directed towards providing the highest output from the planted acre, what the world wanted was a definite ratio in the relation of production to consumption.

Rubber Exchange Trading

In the first six months of 1929, a total of 334,852 tons of crude rubber were traded in on the Rubber Exchange of New York, as compared with 305,087 tons in the first half of 1928. This represents a ten per cent increase.

Closing Prices on Rubber Exchange of New York, Inc.

FROM JULY 3 TO JULY 20, 1929

		Spot	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Sales*
July	3	20.80	20.80	21.10	21.40	21.60	21.90	22.10	22.30	22.50	22.70	22.90	23.00	23.10	475
	5	21.10	21.10	21.30	21.60	21.80	22.10	22.30	22.60	22.80	22.90	23.10	23.30	23.40	488
	6	21.50	21.50	21.80	22.10	22.40	22.70	22.80	23.00	23.30	23.50	23.70	23.90	24.20	446
	8	22.40	22.40	22.70	23.00	23.50	23.60	24.00	24.00	24.30	24.60	24.90	25.20	25.40	1,800
	9	21.80	21.70	22.00	22.30	22.80	23.00	23.20	23.40	23.50	23.60	23.90	24.10	24.20	996
	10	21.70	21.70	22.10	22.50	22.90	23.10	23.30	23.50	23.70	23.90	24.10	24.30	24.50	1,077
	11	21.60	21.60	22.00	22.40	22.70	23.00	23.30	23.30	23.60	23.80	24.00	24.20	24.40	593
	12	21.40	21.40	21.60	21.90	22.40	22.60	22.70*	22.80	23.10	23.30	23.60	23.80	24.00	784
	13	21.60	21.60	21.80	22.10	22.50	22.80	23.00	23.10	23.30	23.50	23.80	24.10	24.30	107
	15	21.20	21.20	21.50	21.70	22.00	22.30	22.50	22.70	22.90	23.00	23.30	23.50	23.70	547
	16	20.70	20.70	21.10	21.30	21.50	21.80	22.10	22.20	22.50	22.70	22.90	23.00	23.20	687
	17	20.70	20.70	21.00	21.20	21.60	21.80	22.00	22.10	22.40	22.70	22.90	23.00	23.20	367
	18	20.80	20.70	21.00	21.40	21.60	21.90	22.20	22.40	22.60	22.80	23.00	23.20	23.40	458
	19	20.60	20.50	20.80	21.10	21.40	21.70	21.90	22.10	22.40	22.60	22.80	22.90	23.00	292
	20	20.60	20.50	20.80	21.20	21.50	21.70	21.90	22.10	22.40	22.60	22.80	23.00	23.20	57

*In lots of 2½ tons each.

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Rubber Goods and Specialties

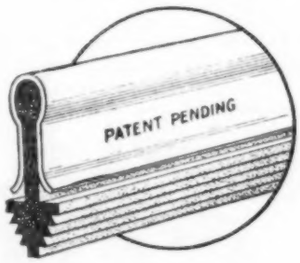
Norwalk Gold Standard Tire

The Gold Standard is a new casing made by the Norwalk Tire & Rubber Company, Norwalk, Conn., which is referred to as "rubber lined." There is a lining of red rubber inside the casing where the bottom ply of fabric would ordinarily be found. It is claimed by the manufacturer that this rubber lining serves as a cushion to protect

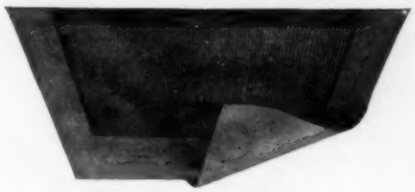
plies of the fabric, provides flexibility and greater strength, and acts as a cooling device against internal heat.

Ten-Edge Wiper Blade

The Anderson Company, Gary, Ind., is offering this new windshield wiper blade, which has ten edges of rubber to remove water, mud or snow from the windshield of a car. It is stated by the manufacturer that



the blade cleans itself and the glass without scratching or smearing. It reverses at the end of the stroke and is said to require less pressure on the glass than ordinary blades. It holds its shape and does not "squat" out of shape in action. The blades are packed in individual boxes, then in lots of 10 in a magazine merchandiser, and 10 Anco adapters are given free to each merchandiser.



Hycoe Car Mats

The Manhattan Rubber Manufacturing Company, Passaic, N. J., manufacturer of Hycoe automotive products, has announced a new item in Hycoe car mats. These are being produced in two sizes, senior and junior. The senior mat measures 37½ inches top by 43½ inches bottom by 40 inches deep, and the junior mat measures 34 inches top by 39½ inches bottom by 32½ inches deep. Both sizes come in grades "A" and "B." The mats are packed by the manufacturer in individual boxes.

Rubber Swimming Sandals

The newest swimming sandals seen at the English seaside resorts are similar in style to Roman sandals, and are made from rubber in a large variety of colors. They are warranted not to kick off or to incommode swimming or diving in any way and are

reported to be popular with men as well as women. Made in green, scarlet or black, the sandals are fastened with small studs, which slip into holes in the straps and are adaptable to the size of the wearer's ankles and insteps.

Rubber Wall Covering

A floor, roof or wall covering devised by M. H. Tate, 97 Adelaide Terrace, Perth, Western Australia, comprises a sheet of rubber and a layer of plain felt fabric made from antiseptically treated pulp attached together by adhesive and pressure and then vulcanized. Instead of plain felt, one or more thicknesses of plain felt and one or more thicknesses of felt impregnated with bitumen or pitch may be used. A sheet of rubber on each side of the plain or composite felt may be used, and hessian, canvas or other fabric may be incorporated in the material.

Bearfoot Sole

Announced by its manufacturer as being made of a new basic material, the Bearfoot rubber composition sport sole has already won considerable popularity. It embodies a unique sport design, which includes a pair of crissed golf clubs, a tennis racket with the figure of a player in action, and several balls. This sole is furnished in different colors, which blend easily with any shoe. According to the manufacturer, its attractive appearance, its non-slip feature and full measure of comfortable service have contributed greatly to the sale of those shoes equipped with it. These soles are manufactured at Akron by the Bearfoot Sole Company, Inc., whose sales office is at 178 Lincoln Street, Boston, Mass.

Pneumatic Cushions

A novel device in connection with the manufacture of pneumatic cushions has been patented by G. W. T. Leeson of the Sorbo Works, Woking, Surrey, England. An impermeable bag to which air can be admitted through a valve has strips of sponge rubber arranged in staggered relationship within it so that the more solid foundation thus provided minimizes the rolling and wobbliness of a simple air cushion or seat. In use, a covering is added which may be of sponge rubber also.

Water Snake

Extremely lifelike, this inflated rubber water snake manufactured by the Seamless Rubber Company, New Haven, Conn., is attractive because of its very grotesqueness. It goes around the body of a bather without the necessity of slipping it over the head or stepping through it and is said to cling "snugly and affectionately" around any size figure.

Old Ajax Plant Bought

The old Trenton, N. J., plant of the Ajax Rubber Company has been sold to T. Arthur Karno, Samuel Kreuger, Frank Millner and the Citron-Beyer Company of Trenton. The new owners have not yet decided what disposition they will make of the factory, which covers six and a half acres and was held at $500,000. The Ajax company abandoned the plant nearly two years ago to concentrate its activities at Racine, Wis.

National Tire Land Sold

Murray A. Nadler, trustee in bankruptcy for the National Tire & Rubber Company, East Palestine, O., has, by order of the federal court, given a deed for the real estate to Louis Rosenblum for a consideration of $1. The land transferred consists of five acres at East Palestine and also a tract 25 by 355 feet for railroad siding.

Scrap Rubber Rates to Gadsden

Southern Freight Association Docket No. 45,281 proposes to establish the following rates on scrap rubber, carloads, to Gadsden, Ala.: from Columbus and Dublin, Ga., 29½c and 33c, respectively; Submittal No. 45,485 proposes to establish a rate of 37c per 100 lbs. on scrap rubber (other than crude rubber) on old worn-out rubber boots, shoes, etc., having value only for reclamation of raw materials, minimum weight 30,000 lbs., from aCiro, Ill., Metropolis, Ill., and Paducah, Ky., to Gadsden, Ala., and Submittal No. 45,510 proposes to establish the following rates on scrap rubber to Gadsden, Ala.: from Huntsville, Ala., 24c; Decatur, Ala., 28c; Florence, Sheffield and Tuscumbia, Ala., 30c per 100 lbs.

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WANTED: Four salesmen, technical training, factory experience, by chemical company to call on rubber goods manufacturers located in Boston, New York, Chicago, Pacific Coast. Straight salary. Please give complete details with first letter. Address Box 522, THE RUBBER AGE.

FOR SALE

FOR SALE—Laboratory size Mill, Calender, Farrel Foundry & Machine Co. Press, and steam Vulcanizer with small accessories, also Scott tester. Box 523, THE RUBBER AGE.

FOR SALE—ABSTRACTS
CARD ABSTRACTS covering every important paper, publication and patent on Rubber and allied gums from 1907 to date. Arranged alphabetically by subjects with complete cross references. 40,000 cards in 24 Y & E oak cases. Address Box 515, THE RUBBER AGE.

FOR SALE—One small bomb for Bierer-Davis Rubber Ageing Apparatus, consisting of small size steel oxygen pressure bomb with safety valve and rack for holding samples, connecting arm, plate holder and wrench for closing. All in first-class shape. Address Box 519, THE RUBBER AGE.

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INVESTIGATIONS INVITED

You Cannot Afford to Be Without Them

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For Artificial Leather, Oil Cloth, Carriage and Automobile Covers

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LATE MARKET PRICES

Crude, Scrap & Reclaimed Rubber - Cottons and Fabrics

NEW YORK, JULY 20, 1929

COTTON

PUBLICATION of the Department of Agriculture acreage report on July 8 and the continued drought in Texas have forced the price of cotton sharply upward during the past fortnight. Spot price quotations have risen from 18.20 cents a pound at the beginning of the period to 19.45 cents a pound at the close on July 20.

According to the Crop Reporting Board, the cotton acreage in cultivation on July 1 amounted to 48,457,000 acres, an increase of 1,511,000 acres, or 3.2 per cent, compared with the revised official estimate a year ago. The figures were slightly less than expected and, in conjunction with fears of severe weevil damage and lack of rain, promoted a fair amount of trade buying. Considering statistics, the possibilities of weevil damage, plus the usual deterioration, the crop may at itmes look wholly inadequate.

High, low and closing prices quoted on July 20 were as follows:

	High	Low	Close	Close
July	19.08	18.93	19.07	17.85
Sept.	———	———	19.31	18.15
Oct.	19.46	19.38	19.45	18.39

Tire Fabrics

Despite the record breaking rubber consumption and tire production during May, the Rubber Manufacturers Association estimates that the industry consumed less cotton fabric that month than in April. The May consumption of cotton fabric, in the tire industry, according to the association was 31,069,490 pounds as against 31,492,910 pounds in April. Estimating June consumption at close to 26,500,000 pounds, it would appear that approximately 171,000,000 pounds of cotton fabric have been used by the tire industry in the first half of 1929. Prices have been higher in sympathy with the advance in cotton.

CORD			
Peeler, carded, 23/5/3	lb	.47 @	.48
Peeler, carded, 23/4/3	lb	.48 @	.49
Peeler, carded, 13/3/3	lb	.44½ @	.45½
Peeler, carded, 15/3/3	lb	.45 @	.46
Egyptian, carded, 23/5/3	lb	.53½@	.54
Egyptian, combed, 23/5/3	lb.	.57½@	.58
CHAFERS			
Carded, American, 8 oz.	lb	.40 @	.41
Carded, American, 10 oz.	lb	.40½@	.41½
Carded, American, 12 oz.	lb	.40½@	.42½
Carded, American, 14 oz.	lb	.39 @	.45
LENO BREAKER			
Carded, American, 8¼ oz.	lb.	.40 @	.46
Carded, American, 10¼ oz.	lb.	.40 @	.46
SQUARE WOVEN			
Carded, American, 17¼ oz. 23-11 ply	lb.	.47 @	.48
Carded, American, 17¼ oz. 10-ply	lb	.39 @	.40

Sheetings

There have been slight advances in quotations for some grades of sheetings as shown in the following prices:

40-inch, 2.50-yard	yd.	.12¼@	.12¼
40-inch, 2.85-yard	yd.	.10⅝@	.10¾
40-inch, 3.15-yard	yd.	— @	.11
40-inch, 3.60-yard	yd.	.09¼@	.09⅜
40-inch, 3.75-yard	yd.	.08¼@	.08¼
40-inch, 4.25-yard	yd.	.07⅛@	.07¼

Ducks

More inquiry and slightly better business were reported in cotton ducks during the fortnight just ended. Sales were of nearly all types of goods, with small lots bringing premiums, although yardage was available at lower prices.

Belting and Hose	lb.	.36 @	.36½
Enameling	lb.	.35 @	.36
Single filling	lb.	.14½@	.16
Double filling	lb.	.17½@	.18½

RECLAIMED RUBBER

Revised figures, based on the government's estimate of the Rubber Manufacturers Association report as only 70.2 per cent complete, indicate a total consumption of 125,514 long tons of reclaimed rubber in the United States during the first six months of 1929. This compares with a consumption of 105,875 long tons in the first half of 1928 and 117,125 long tons in the second half. However, the amount of reclaimed rubber used by American manufacturers thus far this year has been equal only to 46.6 per cent of the crude rubber consumption, as against a ratio of 55.5 in the first half of last year. There will probably be a reduction of close to 20 per cent in reclaim consumption during the remainder of the year, giving a total 1929 consumption of about 228,000 long tons. Late prices follow:

High Tensile			
Super-Reclaim No. 1 Black	lb.	.12¼@	.12½
Super-Reclaim No. 2 Black	lb.	.11¾@	.12
High Tensile Red	lb.	.12 @	.12¼
Shoe			
Unwashed	lb.	.07 @	.07¼
Washed	lb.	.09¾@	.10
Tube			
No. 1 (Floating)	lb.	.13 @	.13½
No. 2 (compounded)	lb.	.10¼ @	10½
Tires			
Black	lb.	.07½@	.07¾
Black, selected tires	lb.	.07¾@	.08
Dark Gray	lb.	.10 @	.10¼
Light Gray	lb.	.12 @	.12¼
White	lb.	.12 @	.12½
Truck, Heavy Gravity	lb.	07 @	.07¼
Truck, Light Gravity	lb.	.07¼@	.07½
Miscellaneous			
Mechanical Blends	lb.	.07 @	.07½
Red	lb.	.12 @	.12½

Scrap Rubber

With the curtailment of production in reclaimed rubber factories, the demand for scrap rubber has lessened appreciably. The additional fact that most reclaimers appear to have fairly large stocks of rubber scrap on hand has led to slightly easier prices.

(Prices to Consumer)

Auto tire peelings	ton	42.50	@45.00
Standard White auto	ton	47.50	@50.00
Mixed auto	ton	26.50	@27.50
Bicycle tires	ton	20.00	@22.50
Clean solid truck tires	ton	24.00	@25.00
Boots and shoes	cwt.	1.45	@ 1.50
Arctics, untrimmed	lb.	.00⅞ @	.01
Inner tubes, No. 1	lb.	.08 @	.08¼
Inner tubes, No. 2, compounded	lb.	.04¼ @	.04¾
Inner Tubes, Red	lb.	.05¼@	.05⅜
Air Brake Hose	ton	32.00	@34.00
Rubber Hose	ton	17.50	@20.00

CRUDE RUBBER

WITH the exception of a single day, July 8, the crude rubber market has been comparatively dull and inactive. Prices on that day rose sharply from 21¼ cents to 22½ cents a pound for spot rubber, but since then there has been a steady decline until the closing days saw quotations below those of the end of the preceding fortnight.

Domestic consumption of crude rubber during the first six months of 1929 was 269,307 long tons, according to the monthly reports of the Rubber Manufacturers Association. According to THE RUBBER AGE estimates of the total 1929 consumption, the second half of the year will see only from 215,000 to 220,000 tons absorbed, and there has not yet appeared any valid reason for changing these predictions. This means an average monthly consumption in the neighborhood of 36,000 tons, toward which the industry is already heading. Some authorities estimate that July figures will show only 37,000 tons of rubber used in this country, but this seems somewhat low.

The total of American imports of crude rubber in the first half of 1929 has been 320,979 tons, according to the Department of Commerce. Shipments from Malaya continue to be lower.

The consumption of rubber by foreign factories is on the increase, especially in American plants abroad. The directors of the Goodyear Tire & Rubber Company are said to be considering a branch factory in South America, probably in Argentina, with an initial capacity of 3,000 tires a day. C. A. Stillman, vice-president of the company, has just returned from South America where he made a survey of the possibilities for such a plant.

Prices on the New York outside market on July 20 were as follows:

Plantations—			
Ribbed Smoked Sheets—			
Spot-July	.20⅝	@	.20⅞
Aug.-Sept.	.20¾	@	.21
Oct.-Dec.	.21½	@	.21¾
First Latex, crepe spot	.22¼	@	.22½
Amber Crepe, No. 2	.18⅛	@	.18⅜
Amber Crepe, No. 3	.17⅞	@	.18¼
Amber Crepe, No. 4	.17⅝	@	.17⅞
Brown Crepe, Clean thin	.17¾	@	.18
Brown Crepe, specky	.17½	@	.17¾
Liquid Latex, per gal.	1.00		
Paras—			
Up-river Fine	.22¼	@	.22½
Up-river Medium	Nominal		
Up-river Coarse	.11½	@	.12
Acre Bolivian, fine	.23¾	@	.23
Caucho Ball, Upper	.12	@	—
Islands, fine	Nominal		
Centrals—			
Central, scrap	.11½	@	.12
Esmeraldas	.11½	@	.12
Balata—			
Block, Colombia	Nominal		
Block, Ciudad	.54	@	

LONDON MARKET

Standard Ribbed Smoked Sheets—Buyers			
Spot	10¾d	@	10⅞d
July-Sept.	10⅞d	@	

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—Sellers			
Spot	d	@	10¼d

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LATE RUBBER CHEMICAL PRICES

Accelerators — Colors — Softeners — Compounding Materials

NEW YORK, JULY 20, 1929

WHETHER the comparatively low rate of rubber factory production during June will be followed by still lower schedules of output in the remaining months of the year is the chief question in the minds of suppliers of rubber chemicals and compounding ingredients. Tire factories are curtailing their volume to a large extent, with a resultant decrease in the use of chemicals and compounding materials. It now seems likely that the second half of 1929 will very closely approximate the first half of 1928 in production of goods and in consumption of crude rubber. European rubber factories, however, are not slackening down and chemical suppliers may expect their export business to continue high through the remainder of the year.

ACCELERATORS

Organic				
A-7	lb.	.55	@	.59
A-11	lb.	.62	@	.66
A-16	lb.	.57	@	.61
A-19	lb.	.58	@	.62
A-20	lb.	.64	@	.68
Accelerator 102	lb.			
Accelerator 552	lb.			
Accelerator 808	lb.			
Accelerator 883	lb.			
Aero-X	lb.	.60	@	.65
Aldehyde ammonia, crystals	lb.	.65	@	.70
Aniline oil, drums, f.o.b. works	lb.	.15	@	.16¼
Crylene	lb.	.55	@	.65
paste	lb.	.45	@	.55
Di-Ortho-Tolyguanidine	lb.	.42	@	.52
Diphenylguanidine	lb.	.30	@	.36
Ethylidene anilene	lb.	.45	@	.47½
Formaldehyde aniline	lb.	.34	@	.44
Heptene	lb.	.40	@	—
Hexamethylene-tetramine	lb.	.62½	@	.65
Lithex	lb.	.18	@	.20
Methylenedianiline	lb.	.35	@	.45
Monex	lb.	3.35	@	—
Oxynone	lb.	.65	@	.80
Para-Nitrosodimethylaniline, f.o.b. works	lb.	.92	@	.96
Piperidine-Piperidyldithio-Carbamate	lb.	4.45	@	4.60
R & H 40	lb.	.40	@	.42½
R & H 50	lb.	.40	@	.42½
R & H 397	lb.	.75	@	.77½
Safex	lb.	1.20	@	1.25
Tensilac, No. 39	lb.	.50	@	.52½
Tensilac, No. 41	lb.	.50	@	.52½
Thermio F	lb.	.50	@	.55
Thiocarbanilide, drums	lb.	.26½	@	.28½
Thionex	lb.			
Trimene	lb.	.75	@	—
base	lb.	1.20	@	—
Triphenylguanidine	lb.	.58	@	.62½
Ureka	lb.	.75	@	1.00
Vulcanex	lb.			
Vulcone	lb.			
Vulcanol	lb.			
Waxene	lb.	.30	@	.32
Z 88	lb.	.50	@	.60
Inorganic				
Lead, sublimed blue	lb.	.08¼	@	—
Lead, white	lb.	.10½	@	.12½
Litharge, domestic	lb.	.09	@	—
Magnesia, calcined, light	per 100 lb.	5.35	@	5.45
heavy	per 100 lb.	3.65	@	3.75

COLORS

Blacks (See Compounding Materials)				
Blues				
Prussian	lb.	.35	@	.40
Ultramarine	lb.	.06	@	.30
Browns				
Sienna, Italian	lb.	.05½	@	.12½
Umber, Turkey	lb.	.04½	@	.07
Greens				
Chrome, light	lb.	.27	@	.31
medium	lb.	.28	@	.31
dark	lb.	.31	@	.34
Chromium Oxide, bbl.	lb.	.31	@	.38
Reds				
Antimony crimson, 15/17	lb.	.44	@	.50
sulfur free	lb.	.52	@	.60
golden 15/17 F.S.	lb.	.20	@	.25
Indian English	lb.	.08	@	.12
Domestic (Maroon)	lb.	.08	@	.12
Oximony	lb.	.13¼	@	—
Red oxide, pure	lb.	.10	@	.12
Venetian red	lb.	.03	@	.06
Vermillion, quicksilver, English	lb.	1.95	@	—
Whites				
Lithopone, Akcolith	lb.	.05 3/5	@	.06
Lithopone, Azolith	lb.	.05¼	@	.05¾
Lithopone, Vanolith	lb.	.05¾	@	—
Titanox	lb.	.09¼	@	.10
Cal. Base Pigment	lb.	.10	@	.10½
Zinc Oxide—American Process				
American Azo:				
ZZZ (lead free)	lb.	.06½	@	.07
ZZ (leaded)	lb.	.06⅝	@	.06⅞
Zinc Oxide—French Process				
White seal	lb.	.11⅞	@	—
Green seal	lb.	.10⅞	@	—
Red Seal		.09⅞	@	—
Yellows				
Chrome	lb.	.16½	@	.17
Ocher, French medium	lb.	.02	@	.03
domestic	lb.	.01⅝	@	.02

COMPOUNDING MATERIALS

Aluminum Flake	ton	21.85	@	24.50
Ammonia carbonate	lb.	.10½	@	.12
Asbestine	ton	14.75	@	18.00
Barium carbonate	lb.	.03½	@	.05
Barium Dust	lb.	.05	@	.06
Barytes southern off-color	ton	12.00	@	18.00
Western prime white	ton	23.00	@	—
imported	ton	27.00	@	36.00
Basofor	lb.	.04½	@	—
Blacks				
Arrow "Aerfloted"	lb.	.08½	@	.12½
Bone Black	lb.	.07	@	.08½
Carbon, compressed	lb.	.08½	@	.12½
Carbon, uncompressed	lb.	.08	@	.12
Drop Black	lb.	.06	@	.10
Fumonex	lb.	.06	@	.09
Gastex	lb.	.04½	@	.08
Lamp Black	lb.	.12	@	.40
Micronex	lb.	.09	@	.13
Velvetex carbon	lb.	.04½	@	.06
Blanc fixe dry f.o.b. works	lb.	.03½	@	.03⅝
Carrara filler	lb.	.01¾	@	.02
Catalpo (fact.)	lb.	.02	@	—
Chalk	ton	12.00	@	14.00
Clay, China, domestic	ton	8.00	@	9.00
Aerfloted Suprex	ton	10.00	@	22.00
Congaree, c. l. f.o.b. mine	ton	9.00	@	—
Mineral Flour, c. l. fob mine	ton	20.00	@	23.00
Tensulite		15.00	@	—
Glues, extra white	lb.	.22	@	.26
medium white	lb.	.20	@	.24
Magnesia, carbonate	lb.	.08¾	@	.11
Mica (muscovite) 160 mesh				
White, water grnd., c.l.	lb.	.06	@	—
White, water grnd., ton lots, whse.	lb.	.07	@	—
White, water grnd., less ton lots, whse.	lb.	.08	@	—
Off color (biolite)	lb.	.05	@	.07
Rotten Stone (powdered)	lb.	.02½	@	.04½
Soapstone, powdered	ton	15.00	@	22.00
Starch, powdered	cwt.	3.30	@	3.70
Talc, domestic	ton	12.00	@	15.00
Whiting, commercial	cwt.	.85	@	1.00
English cliffstone	cwt.	1.50	@	—
Superfine	ton	10.00	@	12.00
Witco	ton	12.00	@	—
Wood pulp XXX	ton	45.00	@	—
Wood pulp X	ton	25.00	@	—
Zinc Carbonate	lb.	.09½	@	.10½
Zinc Stearate	lb.	.24	@	.25

MINERAL RUBBER

Genasco (factory)	ton	50.00	@	52.00
Montezuma, solid	ton	28.00	@	36.00
Montezuma, granulated	ton	32.00	@	42.00
Paradura	ton	62.50	@	65.00
Pioneer, MR, solid	ton	42.00	@	45.00
Pioneer-granulated	ton	52.00	@	55.00
R & H Hydro-Carbon	ton	27.05	@	29.00
Robertson, MR, solid	ton	34.00	@	80.00
M.R. (gran)	ton	38.00	@	80.00

SOFTENERS

Acids				
Nitric, 36 degrees	cwt.	5.00	@	5.25
Sulfuric, 60 degrees	ton	10.50	@	11.50
66 degrees	ton	15.00	@	16.00
Tartaric, crystals	lb.	.37	@	.38
Acids, Fatty				
Stearex	lb.	.15½	@	.20
Stearic, double pressed	lb.	.17	@	.22
Alkalies				
Caustic soda, 76%	cwt.	3.76	@	3.91
Soda ash, 58% C.L.	cwt.	1.40	@	
Oils				
Corn, refined, bbls.	lb.	.11	@	.11½
Cottonseed, crude		.08½	@	.08¾
Cycline	gal.	.27	@	.34
Degras (c.l. 100 bbls.)	lb.	.03¾	@	—
Less c. l. (10-25 bbls.)	lb.	.04	@	—
Lots less than 10 bbls.	lb.	.04¼	@	.04½
Fluxrite	lb.	.05	@	.06
Hexalin	lb.	.60	@	—
Acetate	lb.	.70	@	—
Linseed, Raw C.L. bbl.	lb.	.09½	@	.10
Palm Lagos	lb.	.07¼	@	.07½
Niger	lb.	.07¾	@	.08
Vansulol	lb.	.10½	@	—
Para-Flux	gal.	.17	@	—
Petrolatum, white	lb.	.08	@	.08½
dark amber	lb.	.03⅝	@	.03⅝
Pine, steam distilled	gal.	.65	@	.70
Witco Softener (f.o.b. works)	lb	.02	@	—
Resins and Pitches				
Pitch, Burgundy	lb.	.06½	@	.07½
coal tar	gal.	.05½	@	.06
pine, 200 lb. gr. wt.	bbl.	9.00	@	10.00
Rosin, grade K, 280 lb. bbl.		8.55	@	—
Pigmentar	gal.	.33	@	.41
Solvenol, drums	gal.	.48	@	.50
Tarol, drums	gal.	.30	@	.35
Tar Retort, 50 gal.	bbl.	12.50	@	13.00
Solvents				
Acetone, pure	lb.	.13	@	
Alcohol denatured, No. 1 bbls.	gal.	.37½	@	.44½
Benzol, 90%	gal.	.28	@	—
Carbon bisulphide	lb.	.05½	@	.06¼
Carbon tetrachloride	lb.	.06¼	@	.07
Motor gasoline, steel bbls.	gal.	.17	@	—
Naptha, solvent	gal.	.35	@	.40
Turpentine, spirits	gal.	.60	@	.64
wood	gal.	.50	@	.54
Waxes				
Beeswax	lb.	.56	@	.58
Carnauba	lb.	.33	@	—
Ceresin, white	lb.	.10	@	.11
Montan, crude	lb.	.07	@	.07½
Ozokerite, black	lb.	.24	@	.25
green	lb.	.26	@	.30
Paraffin (c. l.—f.o.b. N. Y.)				
Yellow crude scale	lb.	.03¾	@	
White crude scale 124/126	lb	.04	@	
Refined, 125/127	lb.	.05⅝	@	
Refined, 128/130	lb.	.05½	@	
Refined, 135/137	lb.	.07¾	@	
Refined, 138/140	lb.	.08¼	@	
Miscellaneous				
RSL Mold Solution	gal.	.75	@	.100

ANTI-OXIDANTS

Albasan	lb.	.70	@	.75
Antox	lb.			
Neozone	lb.			
Oxynone	lb.	.68	@	.80
Resistox	lb.	.54	@	.57
Stabilite	lb.	.64	@	—
VGB	lb.	.55	@	.66

SUBSTITUTES

Black	lb.	.08	@	.14
White	lb.	.10	@	.16
Brown	lb.	.08	@	.15

VULCANIZING INGREDIENTS

Sulfur Chloride (drums)	lb.	.03¼	@	.03½
Sulfur flour,				
Refined, 100% pure (bags)	cwt.	2.40	@	2.75
Commercial (bags)	cwt.	1.75	@	2.10

TIRES & TUBES
CRUDE RUBBER

STATISTICAL SECTION

AUTOMOBILES
GASOLINE

CONSUMPTION of crude rubber in the United States for the first half of 1929 totaled 269,307 long tons, the figures for June having shown the decline that was expected. While June consumption at 43,227 long tons was a sharp drop from the record May figure of 49,233 tons, it was still far ahead of June, 1928, when only 37,676 tons were absorbed. Although the June domestic consumption seems low in comparison with the preceding month, it represents a rate of production in the American industry that has been exceeded only three times.

Imports were extremely low during June as compared with the previous months of the current year, with the result that stocks of crude rubber on hand in this country declined from 97,192 tons as of May 31 to 92,061 tons as of June 30. Stocks afloat to this country, according to the report of the Rubber Manufacturers Association, had also dropped more than 9,000 tons. The amount of rubber invoiced to the United States has shown no increase, and stocks at London and at Singapore and Penang have shown declines.

As was expected, the report for May tire production proved to be a record for all time at 8,145,368 casings. Inventories, however, were also the highest in history, and June and July production figures are likely to show a decided drop from the record May output.

Latest figures covering imports and exports from the leading producing and consuming countries have been added to the appropriate tables in this section.

PLAN OF THE SECTION

The statistics included in this section have been chosen for their constant importance to the rubber industry. The tables are reprinted in the same relative position in every issue, each table being kept current by the addition of new figures as soon as they become available. The section accordingly affords the most up-to-date, complete and convenient statistical service in the industry.

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U. S. Imports and Exports of Crude Rubber

	Gross Imports			Re-exports			Net Imports
YEARS	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons
1921	185,394	73,772,677	17.76	5,716	2,414,924	18.86	179,678
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1927	426,258	339,874,774	35.60	27,775	24,735,488	39.76	398,483
1928	439,731	244,854,973	25.03	32,159	18,128,361	25.17	407,572
1926:							
July	35,820	33,061,281	41.20	1,554	1,743,854	50.09	34,266
Aug.	27,400	24,670,752	40.21	1,318	1,339,563	45.38	26,082
Sept.	37,112	32,625,032	39.25	1,437	1,519,870	47.20	35,675
Oct.	29,746	25,320,558	38.49	1,366	1,316,270	43.03	28,110
Nov.	39,155	34,890,536	39.78	1,482	1,411,517	42.51	37,673
Dec.	37,754	33,261,366	39.33	1,904	1,841,305	43.16	35,850
1927:							
Jan.	43,340	36,753,719	37.86	1,525	1,444,734	42.28	41,815
Feb.	28,337	23,110,257	36.41	2,451	2,277,297	41.47	25,886
Mar.	35,515	28,693,016	36.07	2,763	3,249,665	52.50	32,752
Apr.	46,202	37,321,505	36.06	1,575	1,428,425	40.48	44,627
May	36,518	30,984,377	37.88	2,782	2,501,562	40.14	33,736
June	33,045	27,850,014	37.62	1,775	1,550,592	39.00	31,270
July	37,677	31,678,259	37.53	1,958	1,560,853	35.59	35,719
Aug.	32,810	26,396,931	75.92	1,809	1,382,768	34.12	31,001
Sept.	33,301	25,314,412	33.94	3,500	3,036,929	38.74	29,801
Oct.	30,184	22,163,282	32.78	2,513	2,042,713	36.29	27,671
Nov.	38,592	27,395,428	31.69	2,469	2,014,196	36.43	36,123
Dec.	30,737	22,213,574	32.26	2,655	2,245,754	37.77	28,082
1928:							
Jan.	39,107	30,278,444	34.56	1,988	1,734,990	38.95	37,119
Feb.	33,663	27,763,655	36.82	2,738	2,229,589	36.35	30,925
Mar.	40,611	32,103,042	35.29	3,718	2,587,435	31.07	36,893
Apr.	37,935	27,287,266	32.11	2,272	1,415,024	27.80	35,663
May	31,059	19,058,672	27.39	2,399	1,386,307	25.80	28,660
June	27,765	14,121,219	22.71	2,621	1,400,697	23.86	25,144
July	31,258	14,144,765	20.20	3,087	1,451,446	20.99	28,171
Aug.	31,204	12,860,150	18.39	2,377	1,084,646	20.37	28,827
Sept.	39,235	16,512,019	18.50	3,038	1,384,148	20.34	36,797
Oct.	44,058	18,200,332	18.44	2,405	1,085,407	20.15	41,653
Nov.	36,519	14,878,441	18.19	2,788	1,207,089	18.52	33,731
Dec.	43,511	17,580,966	18.04	2,738	1,165,743	19.00	40,773
1929:							
Jan.	57,564	22,872,943	17.74	3,663	1,773,401	21.61	53,901
Feb.	64,265	24,760,111	17.20	2,955	1,374,783	20.77	61,310
Mar.	50,604	20,380,905	17.98	4,218	2,094,037	22.16	46,386
Apr.	55,725	25,542,726	20.46	3,293	1,624,237	22.02	52,432
May	51,161	24,355,511	21.25	2,386	1,349,690	21.24	48,325
June	41,663	18,799,307	20.14				

U. S. Consumption of Crude Rubber

(Rubber Manufacturers' Association statistics raised to 100 per cent—All figures in long tons)

Figures on Monthly Basis

	1922	1923	1924	1925	1926	1927	1928	1929
Jan.	16,938	30,106	29,058	29,638	32,196	31,518	34,403	48,002
Feb.	14,767	30,149	25,736	19,761	31,136	30,157	33,702	41,594
Mar.	21,408	36,629	28,385	33,498	32,936	36,141	35,688	44,730
Apr.	19,294	29,085	27,129	34,139	32,696	35,871	32,772	47,521
May	23,246	36,155	25,845	35,322	29,364	34,592	37,333	49,233
June	31,713	24,272	22,753	35,822	28,598	33,801	37,676	43,227
July	24,522	17,685	23,396	36,053	27,577	29,219	37,407	
Aug.	29,631	20,359	28,982	35,909	34,533	33,460	42,927	
Sept.	24,410	17,594	31,497	31,691	32,904	27,214	39,882	
Oct.	26,881	21,321	31,520	29,047	29,836	26,790	40,857	
Nov.	24,950	20,437	27,289	28,853	28,080	26,792	37,461	
Dec.	25,070	31,902	27,199	28,748	26,293	25,492	31,232	
Totals	282,560	305,694	328,769	388,481	366,149	371,027	441,340	

Figures on Quarterly Basis

Quarter	1922	1923	1924	1925	1926	1927	1928	1929
Jan./Mar.		96,776	87,609	95,263	94,301	99,216	103,558	128,565
Apr./June	127,360	89,493	75,674	104,099	87,109	103,242	103,500	
July/Sept.		55,621	83,813	99,493	93,793	89,210	117,573	
Oct./Dec.	155,067	63,617	92,656	85,789	83,212	80,860	117,597	
Totals	282,427	305,507	339,752	384,644	358,415	372,528	442,227	128,565

Note—The Rubber Association estimates its monthly rubber consumption figures to be 90 per cent complete. Up until 1925 the quarterly figures were likewise estimated to be 90 per cent complete; beginning with 1925 an estimate of 92 per cent completeness has been used. These estimates have been used in raising the figures in this table to 100 per cent. The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.

Rubber Invoiced to the U. S.

(Reported by American Consuls—Quantities in Long Tons)

During the Week Ended	From Br. Malaya	From Ceylon	From Dutch East Indies	From London & Liverpool	Total
Apr. 20	6,863	740	1,886	112	9,601
Apr. 27	7,808	1,212	1,723	108	10,851
May 4	6,573	888	2,374	166	10,001
May 11	6,798	852	1,148	213	9,011
May 18	8,026	1,011	2,028	126	11,191
May 25	7,020,	558	2,070	115	9,763
June 1	6,024	759	2,044	45	8,872
June 8	6,117	1,102	1,808	68	9,095
June 15	6,812	983	1,521	99	9,415
June 22	6,393	802	1,555	132	8,882
June 29	6,103	1,416	1,946	73	9,538
July 6	6,123	358	1,909	86	8,476
July 13	6,648	927	1,708	7	9,290

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Ave.
1926																																
December	86¾	87½	87½	87½	—	87	87	87½	87	87	87½	—	87½	87¾	87¾	86	86	86	—	86	86¼	86½	86	85½	—	—	89	88½	88½	86½	86½	88¼
1927																																
January	—	—	88½	89	89¾	89¾	40¾	40¾	—	40½	40¾	40%	40	39¾	39¾	39¾	39¾	39¾	39	39	39	38½	38¾	38¾	38	38	38½	38%	38	38	38	38¾
February	87%	87%	87%	87½	87½	—	87%	87%	—	88	87%	—	—	88	88	88	88	88	88	88	88	88	88	88	88	88	89	89	89½	89½	89	88¾
March	89¾	89¾	40	40¾	41	—	40¾	40¾	40¾	40¾	41	41%	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41½	41½	41
April	41%	40	40	40	41¼	41¼	41	41	41¼	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	40½	40½	40½	40½
May	—	40¾	40	40	40½	40½	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40½	40½	40½	40½	40½	40¾
June	40%	40¾	40¾	40¾	—	41¼	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
July	85½	—	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾
August	84	83¾	85¾	—	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾
Sept.	83¾	83¾	—	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾	83¾
Oct.	85	85½	85½	86½	86½	86½	86½	86½	86½	86½	86½	86½	86½	86½	86½	86½	86½	86½	86½	86½	86½	86½	86½	86½	86½	86½	86½	86½	86½	86½	86½	86½
Nov.	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½
Dec.	40½	40¾	40¾	—	40¾	—	40½	40	40½	—	40¾	40¾	40½	40	40	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
1928																																
January	—	—	41¾	41¾	41¾	41	41	40¾	40¾	40½	40¾	40%	40¾	40½	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
February	87½	87%	87%	87%	86%	86%	87	86%	84½	83%	83%	83%	82	82½	82	81¾	81¾	81¾	81¼	80¾	80¾	80¾	80¾	80¾	80¾	80¾	80¾	80¾	80¾	80¾	80¾	80¾
March	29	28¾	28¾	—	29	28¾	26¾	25½	25¼	25¼	25¼	24¾	24¾	25½	25	25¾	25¾	25¾	—	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾
April	—	27¾	27½	21½	21½	—	—	—	20	18¾	18¾	18¾	18¾	18¾	18¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾	17¾
May	17½	17%	18¾	19¾	19¾	19¾	18¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾
June	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	—	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾
July	—	18¾	19¾	19	19	19¾	19¾	19¾	20	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾
August	19½	19¾	19¾	—	19¾	19¾	19¾	19¾	20	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾
September	—	—	—	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾
October	18%	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾	18¾
November	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%
December	17¾	—	17¾	17¾	17¾	17¾	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
1929																																
January	—	18¼	18¼	18¼	18¼	—	18¼	18¼	18¼	18%	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
February	—	22¾	21¾	22¾	22¾	22¾	22¾	22¾	22¾	22¾	22¾	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
March	25%	26	26	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	24¾	24¾	24¾	24¾	24¾	24¾	24¾	24¾	24¾	24¾	24¾	24¾	24¾	24¾	24¾	24¾	24¾	24¾	24¾
April	—	22%	22½	—	20¾	20¾	21	21	21	20½	20½	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
May	19¾	19¾	19¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾
June	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	22½	21¾	21¾	20½	20½	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾
July	20¾	21¼	21¼	—	21¼	21¼	—	21¼	—	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾	20¾

Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1921

Year	Cents	Year	Cents	Year	Cents
1910	206.60	1914	65.33	1918	60.15
1911	141.30	1915	65.85	1919	48.70
1912	121.60	1916	72.50	1920	36.30
1913	82.04	1917	72.23	1921	16.86

Average Monthly Price per Pound Since 1922

Months	1922 Cents	1923 Cents	1924 Cents	1925 Cents	1926 Cents	1927 Cents	1928 Cents	1929 Cents
Jan.	18.82	32.73	25.86	36.71	79.50	38.75	40.25	20.14
Feb.	16.12	35.14	25.29	36.01	62.25	38.25	32.75	23.97
Mar.	14.53	34.21	22.83	41.00	59.00	41.04	26.82	24.55
Apr.	15.99	32.48	22.51	43.64	51.25	40.86	18.97	21.18
May	15.25	27.39	18.89	58.47	47.75	40.76	18.99	21.46
June	15.11	26.88	18.81	77.26	42.50	37.25	19.59	20.64
July	14.67	26.10	22.16	103.16	41.03	34.87	19.40	——
Aug.	13.93	28.84	26.17	82.99	38.50	35.12	19.46	——
Sept.	14.44	28.95	27.56	88.88	41.00	33.67	18.47	——
Oct.	19.78	26.93	31.13	98.01	42.50	34.32	18.83	——
Nov.	23.88	27.14	34.33	104.80	38.50	37.58	18.26	——
Dec.	27.42	26.60	37.88	98.51	38.25	40.63	17.97	——
Average for Year	17.50	29.45	26.20	72.46	48.50	37.72	22.48	——

London Closing Prices of Ribbed Smoked Sheet

(In Pence Per Pound)

Day	Apr.	May	June	July	Day	Apr.	May	June	July
1	11⅛	9⅞	10¾	10⅝	17	10¼	11⅝	10½	11
2	11¼	10	—	10⅞	18	10	—	10½	10⅞
3	11⅛	10	10⅞	10⅞	19	10	—	10⅝	10¾
4	10⅞	—	10⅝	10⅞	20	10⅛	—	10½	10¾
5	10⅞	—	10⅝	11	21	—	11½	10½	—
6	11	10⅛	10½	11¼	22	9⅞	11⅜	10½	—
7	—	10⅜	10⅜	—	23	10⅛	10½	—	—
8	11	10⅝	10⅝	11½	24	10⅛	10⅝	10½	—
9	11	—	—	11½	25	9⅞	10½	10½	—
10	11	10½	10½	11½	26	10	—	10½	—
11	10⅞	10⅝	10⅝	11½	27	10	10⅜	10⅝	—
12	10⅞	—	10⅜	11¼	28	—	10½	10⅝	—
13	10⅝	11	10⅝	11¼	29	9⅞	10¾	10⅝	—
14	—	11⅜	10½	—	30	9⅞	10⅞	—	—
15	10¾	11½	10½	11¼	31	—	10¾	—	—
16	10⅜	11⅜	—	11					

Average Monthly Price Per Pound

Month	1927 Pence	1928 Pence	1929 Pence	Month	1927 Pence	1928 Pence	1929 Pence
Jan.	19.410	19.310	9.942	Aug.	17.202	9.300	——
Feb.	19.021	15.713	11.875	Sept.	16.293	8.530	——
Mar.	20.125	12.736	12.135	Oct.	16.366	8.807	——
Apr.	19.897	8.864	10.490	Nov.	18.159	8.596	——
May	19.769	8.845	10.717	Dec.	19.690	8.570	——
June	17.880	9.293	10.580	Average			
July	16.770	9.312	——	for Year	18.375	10.656	——

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Day of Month	June	July	Day of Month	June	July	Day of Month	June	July
1	18.40	18.20	11	18.80	18.20	21	18.45	——
2	——	18.20	12	18.95	18.35	22	18.30	——
3	18.75	18.35	13	19.05	18.25	23	——	——
4	18.95	——	14	18.85	——	24	18.30	——
5	19.05	18.35	15	18.80	18.00	25	18.45	——
6	19.00	18.35	16	——	18.35	26	18.65	——
7	18.95	——	17	18.90	18.90	27	18.80	——
8	18.95	18.60	18	18.80	18.85	28	18.65	——
9	——	18.70	19	18.75	19.20	29	18.45	——
10	18.80	18.55	20	18.70	19.45	30	——	——
						31	——	——

Average Monthly Price Per Pound

Month	1927 Cents	1928 Cents	1929 Cents	Month	1927 Cents	1928 Cents	1929 Cents
Jan.	13.42	19.12	20.22	Aug.	20.04	19.28	——
Feb.	14.10	18.40	20.21	Sept.	21.95	18.67	——
Mar.	14.32	19.38	20.19	Oct.	20.22	19.62	——
Apr.	14.75	20.63	20.29	Nov.	20.22	19.84	——
May	16.07	21.58	19.41	Dec.	19.58	20.22	——
June	16.85	21.50	18.74	Average			
July	18.00	21.36	——	for Year	17.49	19.97	——

Stock of Crude Rubber in the U. S.

(All Quantities in Long Tons)

At	ON HAND			AFLOAT			ON HAND AND AFLOAT		
End of	1927	1928	1929	1927	1928	1929	1927	1928	1929
Jan.	76,172	110,244	76,342	45,312	41,256	78,596	121,484	151,500	154,938
Feb.	91,186	108,955	90,058	42,166	43,316	63,825	133,352	152,271	153,883
March	85,740	114,061	100,536	49,600	39,324	56,476	135,340	153,385	157,012
April	92,757	113,083	107,659	38,963	33,986	55,409	131,720	147,069	163,068
May	94,563	105,356	97,192	44,181	34,374	55,404	138,744	139,730	152,596
June	89,250	90,198	92,061	47,233	40,001	46,035	136,483	130,119	138,096
July	98,469	83,242		40,687	42,304		139,056	125,546	
Aug.	96,148	68,994		40,937	51,875		137,085	120,869	
Sept.	97,829	68,851		37,966	48,566		135,793	117,417	
Oct.	97,452	66,421		42,804	41,571		140,256	107,992	
Nov.	101,034	61,956		37,076	68,119		138,110	130,075	
Dec.	100,130	66,166		47,938	68,764		148,068	134,930	

(Rubber Manufacturers' Association figures raised to 100%.)

Stock of Crude Rubber in London

(No. of tons in Wharves and Warehouses, including Latex)

At end of:	1921	1922	1923	1924	1925	1926	1927	1928	1929
Jan.	56,573	67,252	73,498	57,460	27,172	9,994	54,994	66,524	25,191
Feb.	59,439	67,623	70,483	56,732	23,425	10,004	58,826	62,964	25,554
Mar.	63,913	66,670	63,438	55,647	18,104	13,127	63,055	58,272	28,214
Apr.	68,759	68,637	58,770	54,559	12,949	18,773	66,897	53,425	31,368
May	70,403	70,146	54,439	51,615	5,895	20,384	67,169	44,628	
June	69,408	71,597	51,050	51,115	5,318	23,984	63,902	38,756	
July	71,065	71,515	49,937	52,073	4,258	27,727	63,717	35,429	
Aug.	73,211	72,112	58,427	49,700	4,619	30,165	64,491	32,084	
Sept.	72,175	70,977	54,523	44,011	5,453	35,077	68,236	31,440	
Oct.	69,229	68,536	58,891	37,523	5,086	42,138	69,569	24,207	
Nov.	70,786	68,548	60,074	33,593	3,869	44,057	67,050	17,775	
Dec.	69,792	72,299	60,246	29,488	5,697	48,918	63,793	19,815	

At End of Recent Weeks

	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
1928					
July	36,915	35,925	35,238	35,445	———
August	34,294	33,649	32,591	32,815	———
September	31,933	31,477	32,110	31,884	31,462
October	29,525	27,370	26,477	24,240	
November	22,919	21,494	20,194	18,724	———
December	16,855	16,517	17,669	18,821	19,727
1929					
January	21,953	23,016	23,547	24,423	———
February	25,389	25,413	24,757	25,005	———
March	25,441	25,920	26,442	27,656	28,077
April	28,934	30,446	30,503	31,213	
May	31,580	31,127	30,955	30,893	———
June	31,539	31,635	31,127	30,617	30,982
July	29,996	30,661			

Rubber in Singapore and Penang

(Stocks held by Dealers—Quantities in Long Tons)

End of	1927	1928	1929	End of	1927	1928	1929
Jan.	25,440	25,868	29,617	July	22,558	18,663	———
Feb.	26,766	22,867	32,373	Aug.	25,764	18,971	———
Mar.	27,844	20,538	29,437	Sept.	25,178	14,898	———
Apr.	24,543	16,946	26,474	Oct.	25,790	12,149	———
May	25,133	17,437	30,764	Nov.	28,369	29,188	———
June	21,898	18,207	30,403	Dec.	25,798	32,895	———

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total	Per Cent Balloons		Total	Per Cent Balloons
1923	23,140,620	0.6	1926	24,199,524	78.8
1924	21,863,311	19.7	1927	19,700,003	79.1
1925	26,001,664	66.8	1928	24,247,282	81.6
1928			1929		
July	2,209,692	85.9	January	1,835,207	79.4
August	2,318,898	80.2	February	2,265,024	80.8
September	2,315,604	76.9	March	2,613,389	80.4
October	2,114,611	72.2	April	2,729,899	81.3
November	1,213,245	66.4	May	2,574,224	76.5
December	1,101,193	74.7	June	2,184,219	75.3

U. S. Consumption of Gasoline

(In Barrels of 42 Gallons)

MONTHS	1925	1926	1927	1928	1929
January	14,386,000	17,582,000	17,888,000	20,938,000	22,602,000
February	13,210,000	15,814,000	18,240,000	21,136,000	22,776,000
March	14,890,000	19,302,000	22,464,000	24,041,000	28,495,000
April	19,013,000	20,848,000	23,371,000	25,712,000	32,019,000
May	20,459,000	24,213,000	26,579,000	27,355,000	34,117,000
June	20,724,000	23,803,000	27,799,000	29,022,000	
July	22,879,000	24,752,000	29,784,000	30,960,000	
August	22,323,000	26,912,000	29,779,000	33,148,000	
September	20,177,000	22,929,000	28,409,000	29,691,000	
October	19,826,000	23,973,000	25,497,000	30,610,000	
November	18,024,000	20,618,000	24,400,000	26,222,000	
December	17,954,000	21,419,000	23,718,000	26,644,000	
TOTAL	223,865,000	262,165,000	297,928,000	327,932,000	

U. S. Tire and Tube Statistics

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1922	1923	1924	1925	1926	1927	1928
Production	40,932	45,259	51,633	60,845	61,237	64,439	77,944
Shipments	39,987	45,204	50,120	59,262	59,002	64,059	74,296
Inventory[2]	6,132	5,772	7,427	8,142	10,456	10,264	13,624

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1927	1928	1929	1927	1928	1929	1927	1928	1929
Jan.	4,965	5,358	6,722	4,932	5,394	6,626	10,432	9,949	13,712
Feb.	5,095	6,363	6,912	4,458	5,031	5,282	11,075	11,721	15,495
Mar.	6,276	6,819	7,519	5,701	5,731	6,708	11,563	12,389	16,351
Apr.	6,299	6,178	7,884	5,701	5,812	7,294	12,122	12,717	16,929
May	6,151	6,759	8,145	5,657	6,457	7,184	12,462	13,024	17,849
June	6,202	6,692		6,253	7,117		12,462	12,162	
July	5,087	6,498		5,973	7,895		11,326	11,157	
Aug.	5,752	7,469		6,393	8,403		10,721	10,034	
Sept.	4,822	6,802		5,717	7,145		9,722	9,765	
Oct.	4,773	7,326		4,799	5,717		9,665	11,520	
Nov.	4,502	6,075		4,306	4,998		10,136	12,579	
Dec.	4,497	5,605		4,165	4,591		10,264	13,624	

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1922	1923	1924	1925	1926	1927	1928
Production	50,850	60,116	70,706	82,614	76,618	70,823	80,180
Shipments	49,673	59,072	68,016	81,004	71,591	72,896	77,127
Inventory[2]	7,643	8,425	11,052	11,313	16,200	13,692	16,117

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1927	1928	1929	1927	1928	1929	1927	1928	1929
Jan.	5,337	5,441	6,517	6,016	6,072	7,242	15,585	12,982	15,386
Feb.	5,658	6,895	6,769	5,120	5,431	5,278	16,075	14,650	16,999
Mar.	7,184	6,231	7,466	6,157	5,731	6,737	17,096	15,573	17,750
Apr.	7,373	6,661	7,634	6,359	5,702	7,164	17,801	16,638	18,184
May	6,737	7,168	7,660	6,140	6,300	7,038	18,389	17,702	18,928
June	6,306	6,953		6,832	7,136		17,858	17,159	
July	5,284	6,674		7,070	8,729		16,004	14,974	
Aug.	6,480	8,343		7,983	9,350		14,664	13,931	
Sept.	5,651	7,103		6,758	7,154		13,511	13,543	
Oct.	5,065	6,929		5,024	5,662		13,539	15,285	
Nov.	4,775	5,592		4,723	5,002		13,585	15,743	
Dec.	4,969	5,184		4,712	4,858		13,692	16,117	

(1) Rubber Manufacturers' Association figures, raised to 100%. The Association estimates its figures to be 75% representative or complete when issued and that basis has been accepted when preparing the statistics in this table.

(2) Held by manufacturers at end of period indicated.

Automobile Production

	United States			Canada			
	Total	Passenger Cars	Trucks	Total	Passenger Cars	Trucks	Grand Total
1922	2,547,208	2,302,923	244,285	102,053	94,904	7,149	2,649,261
1923	4,020,255	3,631,728	388,527	146,438	129,228	17,210	4,166,693
1924	3,600,918	3,203,049	397,869	135,246	117,765	17,481	3,736,164
1925	4,265,704	3,760,459	505,245	161,389	139,311	22,078	4,427,093
1926	4,298,799	3,808,753	490,046	205,092	164,483	40,609	4,503,891
1927							
July	268,474	236,866	31,608	10,987	8,719	2,268	279,461
Aug.	308,807	274,378	34,429	12,526	10,139	2,387	321,333
Sept.	260,420	226,440	33,980	11,262	8,681	2,581	271,682
Oct.	219,712	183,041	36,671	7,791	6,236	1,555	227,503
Nov.	134,581	109,742	24,839	6,617	5,173	1,444	140,998
Dec.	133,178	105,784	27,394	3,435	2,277	1,158	136,613
TOTAL	3,393,887	2,938,868	453,019	179,426	146,870	32,556	3,573,313
1928							
Jan.	225,039	199,032	26,007	8,463	6,705	1,758	233,502
Feb.	323,368	290,830	32,358	12,504	10,315	2,189	335,872
March	412,825	371,408	41,417	9,724	7,478	2,246	422,549
April	409,948	364,877	45,071	24,240	20,546	3,694	434,188
May	425,990	375,798	50,192	33,942	29,764	4,178	459,932
June	396,967	356,439	40,528	28,399	25,341	3,058	425,366
July	390,445	237,933	52,512	25,226	20,122	5,104	415,671
Aug.	458,429	400,689	57,740	31,245	24,274	6,971	489,674
Sept.	413,722	358,872	54,850	21,193	16,572	4,621	434,915
Oct.	397,096	339,976	57,120	18,536	13,016	5,520	415,632
Nov.	256,936	217,256	39,680	11,769	8,154	3,615	268,705
Dec.	233,135	205,144	27,991	9,425	6,734	2,691	242,560
TOTAL	4,357,384	3,826,613	530,771	242,382	196,737	45,645	4,599,944
1929							
Jan.	402,154	350,617	51,537	21,501	17,164	4,337	423,655
Feb.	466,084	407,589	58,495	31,287	28,486	2,801	497,371
March	584,733	513,266	69,559	40,621	32,833	7,788	625,354
April	620,656	538,679	81,977	41,901	34,392	7,509	662,557
May	603,969	516,055	86,596	31,559	25,129	6,430	635,528
June	545,252	453,956	91,296	21,492	16,511	4,981	566,744

Exports of Crude Rubber from Principal Producing Countries

(Long Tons)

	BRITISH MALAYA[1]							DUTCH EAST INDIES[5]						
	Gross Exports	Gross Exports Minus Imports	Imports	Ceylon[2]	India & Burma[3]	Sarawak[4]	British North Borneo[4]	Siam[4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China[3]	Amazon Valley	All Other[4]	World Total[7]
1923	252,016	70,432	181,584	89,971	6,416	5,705	4,237	1,718	32,930	46,344	57,822	5,067	16,765	7,856	406,955
1924	259,706	108,524	151,182	39,997	7,697	6,699	4,621	2,962	42,446	54,497	80,347	6,688	23,165	9,065	429,366
1925	316,825	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,499	120,626	7,881	25,298	13,797	517,523
1926	391,328	151,243	240,085	58,962	9,874	9,155	6,079	4,027	52,186	71,413	121,231	8,203	24,298	16,017	621,530
1927	371,322	182,845	188,477	55,356	11,321	10,923	6,582	5,472	55,297	77,815	142,171	8,645	28,782	15,633	606,474
1928	409,430	149,787	259,643	57,267	10,790	10,087	6,698	4,813	58,848	82,511	121,770	9,548	21,129	10,690	653,794
1927:															
June	32,607	14,706	17,901	3,348	856	1,100	530	409	4,818	5,518	9,109	772	889	1,731	46,990
July	23,947	12,697	11,250	4,018	827	859	544	333	4,771	6,142	11,566	519	1,757	1,113	43,699
Aug.	30,371	17,105	13,266	5,357	688	1,133	623	546	4,855	6,682	12,440	716	1,928	969	48,703
Sept.	29,885	12,095	17,740	4,911	479	645	566	498	3,685	5,957	9,853	497	2,072	1,213	48,066
Oct.	29,846	15,801	14,045	5,245	802	721	591	542	3,810	7,755	13,633	775	2,752	939	51,520
Nov.	28,277	19,860	8,417	4,464	1,277	1,241	591	600	4,127	6,587	14,395	683	2,369	1,627	46,378
Dec.	32,185	17,865	14,320	4,130	1,395	946	592	664	5,768	7,878	13,438	1,191	3,340	1,444	55,101
1928:															
Jan.	27,789	16,618	11,171	3,830	1,605	842	581	525	4,851	7,988	11,774	1,100	2,273	1,025	47,565
Feb.	28,848	12,911	15,937	4,947	1,081	667	581	536	4,052	6,757	8,630	787	1,612	1,276	46,860
Mar.	27,879	10,508	17,371	3,683	775	645	581	269	3,999	5,825	9,690	700	2,750	1,211	47,499
Apr.	20,189	9,385	10,804	3,238	789	630	494	258	3,993	5,040	5,499	736	1,014	1,323	33,810
May	26,483	10,350	16,133	3,091	654	842	494	241	4,943	5,355	10,347	717	2,602	1,135	45,994
June	22,994	16,168	6,826	3,107	963	926	494	451	5,419	5,863	13,655	725	1,399	960	40,788
July	30,481	13,383	17,098	5,129	1,043	905	593	366	5,602	7,566	11,594	698	1,264	873	52,731
Aug.	35,674	15,114	20,560	5,720	398	1,227	593	544	5,668	7,438	11,893	712	1,732	450	56,986
Sept.	29,769	11,239	18,530	4,675	457	938	594	447	4,956	6,536	9,863	969	1,614	494	50,073
Oct.	24,476	12,603	11,873	3,999	864	949	564	457	5,295	7,474	10,124	513	1,399	732	44,243
Nov.	68,135	10,436	57,699	8,005	1,048	772	564	425	4,950	7,902	7,805	943	1,790	623	92,526
Dec.	66,763	11,122	55,641	7,848	1,113	744	565	294	5,120	8,792	10,896	948	2,220	588	94,769
1929:															
Jan.	52,546	13,415	39,131	8,301	1,664	873	500*	461	5,640	8,067	11,076	395	2,134	642	78,884*
Feb.	47,926	12,103	35,823	6,943	1,117	955	500*	495	6,572	7,511	10,384	965	2,104	520	73,889*
Mar.	49,448	14,553	34,895	6,713	1,413	758	500*	499	5,515	6,620	10,629	741	2,332	786	71,401*
Apr.	49,816	11,414	38,402	4,676	727	747	500*	306	5,997	6,645	11,321	568	1,950		
May	43,960	15,593	28,367	4,850	800	966	500*	453	6,264	6,961	13,437	650	1,922		
June	40,398	14,344	26,054	6,051		1,061	500*	422				608	1,398		

(1) Malayan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, 3,263 in 1926, 2,439 in 1927 and 1,437 in 1928. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included— such shipments were equivalent to 18 tons in 1923, 93 tons 1924, 6 tons 1925, 20 tons in 1926, about ½ ton in 1927, and 1 ton in 1928. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons 1924, 2,239 tons 1925, 44 tons in 1926, 84 tons in 1927, and 1,459 tons in 1928. (6) Calculated from official import statistics of principal consuming countries, viz., United States, United Kingdom, France, Germany, Belgium and Netherlands. This figure includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. *Figure is provisional; final figure will be shown immediately it becomes available.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(Long Tons)

	United States*	United Kingdom	France (h)	Germany	Canada (ac)	Japan (da)	Italy	Russia (ce)	Australia (cd)	Belgium (d)	Netherlands	Scandinavia (abcdf)	Spain (g)	Czechoslovakia (abcd)	World Total
1919	236,977	42,671	17,685	5,584	6,395	9,753	9,894	75	1,002	3,995	2,771	3,149	2,418	9	342,378
1920	248,762	56,844	13,885	11,890	11,746	5,297	6,123	62	1,815	3,840	5,510	2,292	2,008	567	370,641
1921	179,678	42,087	15,135	21,920	8,124	21,713	3,906	165	1,014	1,705	1,022	1,279	2,245	569	300,562
1922	296,267	11,724	24,352	27,546	9,207	15,934	6,430	2,493	2,643	172	-3,807	1,778	589	567	395,885
1923	300,372	12,700	27,392	18,519	18,277	15,372	9,489	2,986	1,649	2,184	792	2,528	630	1,128	408,018
1924	317,747	-11,550	30,446	22,727	14,299	19,571	8,764	2,346	3,124	2,688	-807	3,178	944	1,370	414,847
1925	381,815	4,061	32,956	33,937	19,683	11,117	11,412	7,088	4,757	2,930	875	3,149	1,155	1,558	516,493
1926	395,667	84,865	34,240	22,775	20,229	18,128	9,809	8,529	9,021	2,498	2,870	4,048	1,299	1,870	613,649
1927	398,483	60,249	34,271	34,892	26,405	20,521	11,381	12,018	9,490	6,482	636	4,224	2,055	2,672	627,789
1928	404,496	4,846	36,498	37,855	30,447	25,621	12,433	15,134	8,430	7,958	2,243	4,418	3,178	3,138	596,695
1927:															
May	33,736	2,896	2,006	3,380	2,519	1,084	918	887	694	626	-57	335	155	223	49,402
June	31,270	2,282	2,387	3,632	2,086	798	942	1,506	557	583	-17	243	164	183	46,616
July	35,719	1,116	2,384	2,899	2,104	1,505	1,007	415	903	429	66	227	177	236	49,184
August	31,001	3,463	2,795	3,119	2,013	1,970	1,274	386	650	604	-63	312	138	123	47,785
September	29,801	7,800	1,956	2,891	1,850	2,025	684	518	772	552	-33	451	155	272	49,694
October	27,671	5,888	3,479	4,202	1,790	1,966	1,021	1,075	908	465	156	401	153	363	49,538
November	36,123	1,687	3,661	4,209	1,916	1,575	1,167	1,312	836	749	298	474	246	317	54,570
December	28,082	309	4,696	3,108	2,302	2,710	1,462	1,453	1,242	784	-202	514	268	300	47,028
1928:															
Jan.	37,120	1,921	1,764	2,485	2,290	1,361	760	755	802	589	52	261	335	376	50,871
Feb.	30,926	3,143	2,526	2,984	2,553	1,248	437	783	616	599	98	307	296	297	46,813
Mar.	36,893	3,179	1,902	3,521	2,989	1,694	763	231	918	816	95	351	497	398	54,247
April	35,663	—2,280	2,204	2,719	1,958	2,334	1,114	1,820	832	575	280	339	304	159	48,001
May	28,660	—5,822	3,297	2,944	2,180	2,288	1,090	3,893	655	746	209	485	220	213	41,558
June	25,143	—3,031	3,597	2,968	2,186	2,102	984	4,111	348	743	133	346	251	182	40,063
July	28,170	—1,374	3,518	3,387	2,692	2,026	1,598	724	591	895	395	294	175	394	43,475
Aug.	28,827	48	3,527	2,744	2,447	1,868	875	632	707	519	316	359	58	94	43,021
Sept.	36,800	4,199	3,524	3,553	2,812	1,837	1,278	20	603	597	345	377	277	235	56,457
Oct.	41,667	—934	3,728	4,386	2,943	3,711	1,049	98	766	696	141	527	250	318	59,346
Nov.	33,846	—3,141	3,278	3,694	2,799	2,150	1,340	689	837	544	31	337	252	282	46,938
Dec.	40,781	8,438	3,633	2,470	2,618	3,002	1,145	1,378	755	639	148	435	263	200	65,905
1929:															
Jan.	53,922	11,951	5,645	4,711	3,759	3,776	1,481	956	1,061	740	218	638	179	525	89,571
Feb.	61,331	5,179	5,001	4,613	2,908	2,727	1,259	684	1,131	627	113	226	115	356	86,275
Mar.	46,391	9,068	4,409	4,586	4,961	2,630	1,515	716	725	931	316	354	80	409	77,091
Apr.	52,447	8,295	3,041	5,351	3,177	2,308	1,407		1,518	750	144	956	40	445	
May	48,350	5,112		3,682	2,937				1,437	854	201				

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—Official statistics of rubber imports by Soviet Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. *United States imports of guayule are not included in this compilation; such imports amounted to 4,305 tons in 1926; to 5,010 tons in 1927; to 3,076 in 1928; and to 208 tons in the first 5 months of 1929.

Domestic Production of Miscellaneous Rubber Goods

	Rubber Proofed Fabrics Yards	Rubber Heels Pairs	Rubber Soles Pairs	Mechanical Goods Shipments Dollars
1924	25,020,000	186,279,000	(1)	$48,615,000
1925	23,988,000	206,970,000	16,211,620 (2)	64,877,000
1926	29,328,000	183,312,000	12,253,000	76,789,000
1927	37,872,000	201,014,000	27,160,000	68,625,000
1928	41,179,000	235,170,000	37,645,000	69,114,000
1928:				
January	2,177,000	17,682,000	3,431,000	$5,630,000
February	2,575,000	19,181,000	3,628,000	5,838,000
March	2,853,000	22,583,000	3,747,000	6,675,000
April	2,416,000	18,575,000	2,928,000	5,406,000
May	2,744,000	21,597,000	3,519,000	6,274,000
June	2,953,000	18,763,000	3,321,000	6,126,000
July	3,447,000	17,620,000	3,168,000	5,157,000
August	4,613,000	21,289,000	3,461,000	6,306,000
September	4,966,000	21,451,000	2,725,000	5,393,000
October	5,914,000	21,932,000	2,297,000	5,837,000
November	4,173,000	18,686,000	2,649,000	5,201,000
December	2,848,000	15,811,000	2,771,000	5,271,000
1929:				
January	2,828,000	19,975,000	3,876,000	6,033,000
February	3,095,000	18,979,000	2,869,000	6,135,000
March				7,013,000

(1) Not available; (2) Last 9 months only.
Source: "Survey of Current of Business of the Department of Commerce."

United States Imports of Guayule Rubber and Related Gums

(All quantities in Long Tons)

	Guayule		Balata		Jelutong		Gutta Percha	
	Tons	Dollars	Tons	Dollars	Tons	Dollars	Tons	Dollars
1919	1,430	760,690	727	937,038	8,332	2,213,964	2,900	1,068,698
1920	758	345,985	1,064	1,260,043	5,672	2,068,501	3,183	1,520,309
1921	58	26,945	814	1,077,859	1,745	351,893	985	333,564
1922	127	57,040	812	978,765	2,335	408,812	818	281,012
1923	1,155	542,227	700	898,524	4,565	853,308	912	375,167
1924	1,356	536,392	464	568,456	6,165	1,237,100	1,408	463,610
1925	3,781	1,803,448	517	574,750	6,749	1,642,531	1,603	629,284
1926	4,305	2,562,096	354	327,213	7,263	3,127,757	1,445	661,156
1927	5,018	2,674,957	582	447,246	7,785	2,448,657	1,494	728,172
1928:	3,075	1,755,685	731	430,855	7,552	2,540,059	1,597	777,128
Jan.	432	242,339	27	24,218	588	183,705	150	86,702
Feb.	489	281,295	35	32,165	403	142,621	312	215,085
Mar.	575	365,927	32	26,460	829	388,616	115	57,833
Apr.	512	312,131	47	32,924	592	174,970	68	27,627
May	452	233,414	—	——	679	226,064	100	42,762
June	424	220,081	9	6,799	293	91,152	28	12,374
July	191	100,342	123	46,747	373	113,295	81	27,344
Aug.	—	——	399	165,460	451	126,962	147	60,738
Sept.	—	——	60	38,198	2,028	713,736	125	56,768
Oct.	—	——	121	59,358	429	129,065	239	94,570
Nov.	—	——	59	41,119	472	140,116	88	35,409
Dec.	—	——	83	58,311	522	156,154	145	59,911
1929:								
Jan.	—	——	46	30,374	484	152,260	138	62,950
Feb.	—	——	82	70,209	823	255,594	40	19,806
Mar.	—	——	90	75,444	428	122,026	1	1,140
Apr.	83	38,241	163	93,240	1,086	315,621	1	1,086
May	125	57,260	70	67,891	752	212,400	76	24,053
June	145	62,808	31	26,038	802	248,143	77	25,612

Reclaimed Rubber in the United States

(All Quantities in Long Tons—100% Basis)

Year	Production	Consumption Tons	Consumption % to Crude	Stocks*	Year	Production	Consumption Tons	Consumption % to Crude	Stocks*
1919	81,366	73,535	36.3	.....	1924	80,079	76,072	22.4	.....
1920	86,395	75,297	38.4	.....	1925	132,930	137,105	35.6	13,203
1921	36,725	41,351	24.1	.....	1926	180,582	164,500	45.9	23,218
1922	57,334	54,458	19.3	.....	1927	189,144	178,471	47.6	24,980
1923	74,766	69,584	22.7	.....	1928	208,516	223,000	50.4	24,785
1927:									
Jan.	16,526	12,374	39.3	25,903	July	15,488	13,842	47.4	26,599
Feb.	15,860	14,424	47.8	27,291	Aug.	15,109	15,836	47.3	25,157
Mar.	16,788	13,528	37.4	27,124	Sept.	14,392	14,790	54.3	23,429
Apr.	14,483	16,677	46.5	25,712	Oct.	16,127	17,292	64.5	22,176
May	16,159	15,754	46.1	26,419	Nov.	15,477	14,876	55.5	21,728
June	16,652	15,547	46.0	25,811	Dec.	16,083	13,431	52.7	24,980
1928:									
Jan.	14,862	20,140	58.5	21,941	July	17,278	19,070	51.0	17,305
Feb.	15,291	18,670	55.4	20,848	Aug.	19,049	17,890	41.7	15,881
Mar.	17,069	20,680	57.9	19,558	Sept.	18,693	17,795	44.6	17,991
Apr.	15,393	19,280	58.8	19,283	Oct.	17,182	18,420	45.1	17,026
May	18,945	20,215	54.1	18,137	Nov.	18,245	18,380	49.1	22,399
June	18,781	18,140	48.2	18,709	Dec.	17,728	14,320	45.9	24,785
1929:									
Jan.	18,685	21,068	49.1	24,394	July				
Feb.	18,094	19,829	47.7	23,305	Aug.				
Mar.	19,984	20,867	46.7	22,076	Sept.				
Apr.	19,899	22,435	47.3	20,680	Oct.				
May	20,385	23,176	47.1	19,479	Nov.				
June	18,416	18,141	42.0	17,980	Dec.				

*Stocks on hand at the end of month or year. Exports of reclaimed rubber, not shown in this table, amounted to 8,540 tons in 1927 and 9,577 tons in 1928.

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